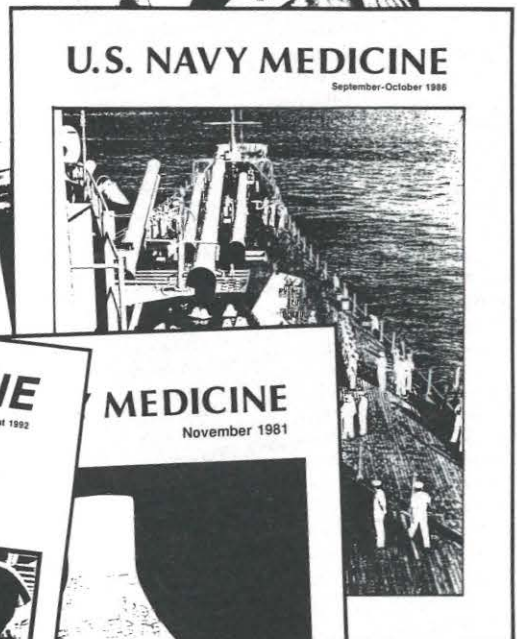
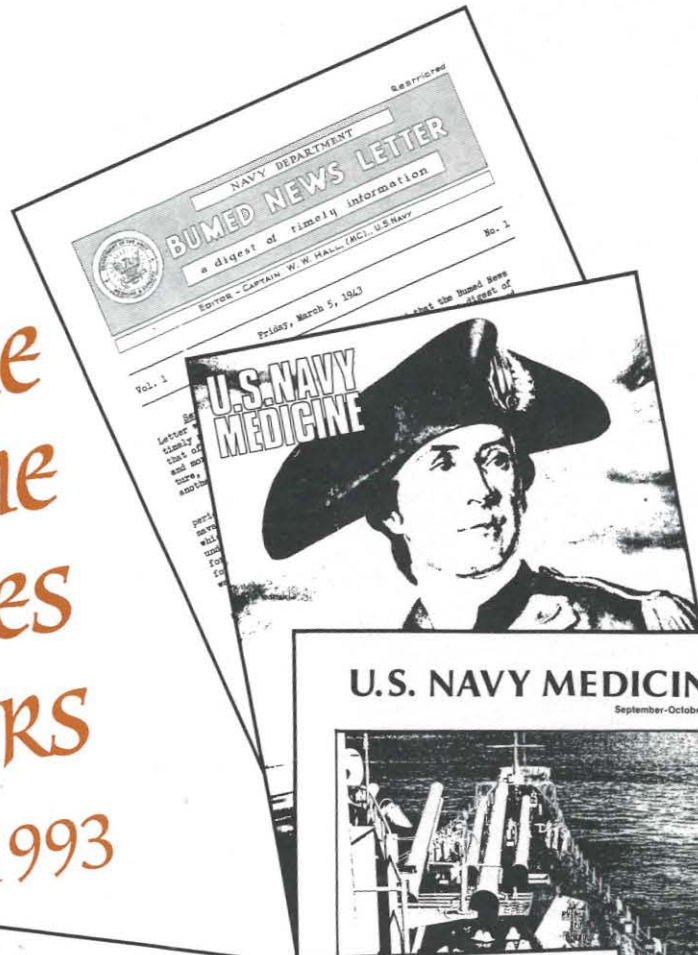


NAVY MEDICINE

September-October 1993

Navy Medicine
Magazine
Celebrates
50 years
1943 - 1993



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Naval Hospital Twentynine Palms:

A New Oasis in the Desert

ON 9 JULY 1993, THE NEW HOSPITAL at Twentynine Palms, CA, officially opened. Despite many obstacles such as financial constraints, staffing issues, and earthquakes, the new state-of-the-art facility is finally a reality. To understand the significance of these accomplishments and what the new hospital means to the Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, we must look back.

The naval hospital at Twentynine Palms has come a long way since the original facility was constructed in 1953. Several additions were built over the past 25 years to add a laboratory, emergency room, family practice, obstetrics/gynecology, and optometry clinics. This 29-bed hospital encompassed a total of 39,000 square feet. With the beneficiary population steadily increasing and the need for additional clinical space, it had been necessary to move many administrative functions to nearby trailers.

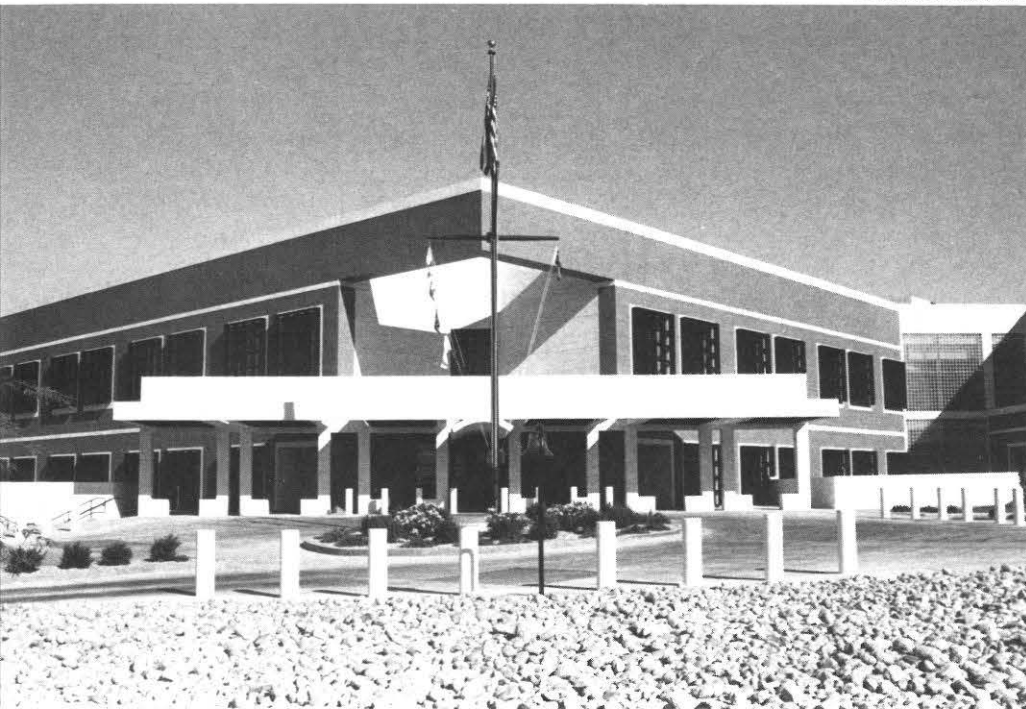
In June 1988, it officially became a naval hospital under the guidance of its first commanding officer, CAPT Russell Brown, MSC. This was a significant event because it marked the facility's independence as a command separate from Naval Hospital Camp Pendleton.

Naval Hospital Twentynine Palms is situated on the largest Marine Corps base in the world encompassing 932 square miles of Southern Mohave Desert. To envision its size, MCAGCC can easily accommodate Camp Pendleton, Camp Lejeune, and Quantico Marine Corps bases within its borders. The naval hospital supports approximately 12,000 active duty personnel in addition to a growing dependent and retiree population of 36,000.

The city of Twentynine Palms is strategically located because it offers the benefits of a small community to its residents with metropolitan areas being a short drive away. The distances

to Naval Hospital Camp Pendleton and San Diego are 138 and 165 miles, respectively. The geographically isolated location of this hospital impacts directly on its mission. For example, the nearest military treatment facility is located 90 miles away at March Air Force Base which has been identified for closure. In addition, the closest civilian hospital, Hi Desert Medical Center, is located 18 miles from the base. However, Hi Desert Medical Center does not provide obstetric or pediatric care. The nearest hospital that provides these services is Desert Hospital in Palm Springs, approximately 60 miles away. Consequently, it is common to have two to three civilian humanitarian deliveries performed each month at the hospital. The mothers are often indigent, receiving little or no prenatal care.

Patients requiring specialty care the hospital cannot provide must be transported to other medical treatment facilities by either ambulance or helicopter.



Naval Hospital Twentynine Palms, CA

ter, depending on the urgency of the case. The average number of monthly ambulance transport runs is 79.

The main mission of MCAGCC is to train Fleet Marine Force Units, both active and reserve, in all facets of combat operations using state-of-the-art equipment and weapons. This training is accomplished through the Combined Arms Exercise (CAX). As many as 3,500 men and women are trained during each 22-day exercise. On an average, 10 CAX's are held each year with members of the Navy and Army joining in to provide air and ground support to the troops.

The Combat Center offers the most realistic combat training because it is the only base where live ammunition is used during maneuvers. Other Marine bases have had to curtail their use of live ammunition due to environmental constraints and space limitations. This fact alone requires the need for the naval hospital to staff a 24-hour emergency room.

Justification for the new hospital was documented as early as 1983, but

it took the active involvement of the Bureau of Medicine and Surgery and the concern of Headquarters Marine Corps to get the project noticed. The project was awarded during a congressionally mandated moratorium on all construction for Department of Defense activities. The Commandant of the Marine Corps, GEN Alfred M. Gray, Jr., took a personal interest in the project and successfully petitioned Congress to award an exemption to the moratorium so that the project could proceed.

The facility has a special design due to its location in an earthquake zone four, the highest zone in the United States. The durability of this unique design was tested in June 1992 when a 7.5 earthquake struck the area. Even an earthquake of this magnitude did not damage the new building. The exterior of the building is also a special design that can accommodate the climate and terrain in the high desert. The facility exterior is covered with tile which is highly durable yet requires little maintenance.

All windows are recessed with sun screens to achieve maximum light with minimum heat.

The facility encompasses a hospital zone of 120,000 square feet, and a clinic zone of 38,000 square feet. The hospital is divided into three sections: an administrative and inpatient section, a diagnostics and treatment section, and a clinic section. The new 40-bed hospital has an expanded bed capacity to 80 beds, CAT scan and other enhanced radiological capabilities, a helicopter landing pad, physical therapy services, a chapel, and a dining facility. With the new central appointment system, backlogs and waiting time will be reduced. In addition, patients have more telephone lines to call in and make appointments, and in-house telephones are available in waiting areas for patients to use.

Overall, this new facility presents a significant improvement in how health care is rendered to the beneficiary population at MCAGCC. The new hospital offers upgrades in several areas. Most of the equipment and furniture is new, a major improvement over the existing conditions in the original facility. The unique design of the new structure allows maximum efficiency and eliminates unnecessary patient travel.

To help commemorate this auspicious occasion, the Surgeon General of the Navy, VADM Donald F. Hagen, MC, was a special guest of honor. Coinciding with the grand opening of the new facility was a change of command and retirement ceremony for the Commanding Officer, CAPT John A. Yauch, MC, with CAPT Carl S. Chitwood, MSC, assuming command. □

—Story by LTJG Marilyn Douglas, MSC, USNR, and ENS Anne Bright, MSC, Public Affairs, Naval Hospital, Twentynine Palms, CA.

Intern Training for the Field

LT Anthony G. Massey, MC, USNR

"YOU WILL ALWAYS NEED THE ABILITY TO rapidly calculate acid-base relationships, especially out in the field," admonished the ICU attending physician after I hesitated while answering a complex question regarding a septic patient with multiple respiratory and metabolic disorders.

I accept this and similar wise-appearing criticisms and dutifully studied such topics during my internship in preparation for my tour as a general medical officer (GMO). After finishing a 2-year tour as the forward deployed Destroyer Squadron 15 medical officer in Japan, I am able to place Navy intern training into a more realistic perspective. I have been "out in the field" and am painfully aware of the many areas my intern training was deficient.

Current Navy intern programs attempt the impossible: to combine the breadth of transition year training with the focus of specialty training. What results from this combination is a thinly spread and somewhat inadequate internship. While no intern program can perfectly prepare a GMO for every potential patient encounter, training geared more toward the requirements of operational medicine could significantly improve the confidence of and the quality of care rendered by first-tour GMOs.

The insight I have gained over the past 2 years is rooted in an understanding of the types of patients a GMO will encounter and the tools available to a GMO practicing in the operational theater. Sailors on ships and submarines are generally young men and women screened to be free of most chronic medical conditions. These sailors may work a 12-hour or longer day 6 or 7 days each week in highly industrial sites with significant risks for multiple trauma and toxic exposure injuries. Further, during time off, they are typically physically active—and if in situations where large amounts of alcohol are consumed (e.g., liberty ports),

they may have poor judgment and perhaps serious accidents.

These real risks of significant traumatic injury make it appear that an operational medical officer might optimally be a trauma surgeon. However, only aircraft carriers are routinely manned and equipped for major surgeries. In truth, a ship or submarine to which a GMO would likely be attached might not even have a suitable operating room light, much less the other equipment needed for acute trauma care. Moreover, critical care facilities are nonexistent at sea. If a patient needs such care, he or she is transported to an appropriate shore-based facility. So while some knowledge of trauma and critical care is important, thorough training in these fields is not required. What is essential—and paradoxically is not provided—is more complete training in psychiatry, orthopedics, dermatology, and gynecology with an emphasis on operational Navy medicine.

While sailors are screened for medical disorders prior to reporting to operational assignments, there is no such screening for coping and behavioral problems. The Navy recruits from the full spectrum of society. Many sailors come from broken and abusive homes. Persons from such backgrounds frequently have difficulty coping with the demands of life in an operational environment and may ultimately be administratively separated with the diagnosis of a personality (or DSM-III-R Axis II) disorder.

Patients with personality disorders are the bane of GMOs. They often consume the greatest amount of time and create the most anxiety of all patients. To make matters worse, most GMOs have had no psychiatric training since their third year of medical school—and that training most likely stressed major affective (or DSM-III-R Axis I) disorders. To better prepare for patients with poor coping

and behavior skills, each GMO ought to be afforded a minimum of 2 weeks (preferably 4 weeks) of psychiatric training including outpatient and inpatient care.

Perhaps because sailors are too healthy to have other major medical problems, orthopedic injuries are among the most frequently encountered patient complaints. Whether a GMO received training on common orthopedic complaints is purely a matter of chance in programs that rely on emergency medicine rotations to train interns in primary care orthopedics. Consequently, intern programs should be modified to include outpatient orthopedic acute care as well as lectures by orthopedic surgeons discussing common disorders such as sports-related injuries, low back pain, and carpal tunnel syndrome.

Regarding obstetrics and gynecology (Ob/Gyn) training, a GMO will probably never deliver a baby or treat a woman who is more than a few months pregnant. It would seem logical that training for operational medicine should focus on gynecology. Unfortunately, every GMO I have encountered has lamented his or her lack of gynecologic training. This deficiency is largely due to the current policy of requiring all non-Ob/Gyn interns to work during their Ob/Gyn rotation at least half their clinic time in an obstetrics clinic and all of their call nights on the labor deck. This policy is a gross disservice to operational medicine. During the Ob/Gyn rotation, time in clinics should focus on routine gynecologic exams and acute care and call should be predominately gynecology.

Another notably deficient area of intern training is dermatology. While prevailing wisdom within the GMO community is that most skin conditions can be managed with a steroid cream without knowing an etiology, such blind treatment is certainly not optimal medicine. For the GMO who wishes to successfully diagnose and treat skin conditions at sea, a good dermatology text is helpful, but it is no substitute for prior supervised training. Interns who will be GMOs should have at least 2 and preferably 4 weeks of dermatology training.

Many GMOs are surprised by how much of their time is spent on nonclinical duties. A GMO will normally be a department head. As such, he or she will supervise, train, counsel, and lead between 5 and 30 hospital corpsmen (who often have had much more Navy experience than the GMO). Success as a leader is directly related to maturity gained through seasoning, yet intern programs do not allow for much management experience. One way to increase the exposure interns have to a leadership role would be to have them participate to a greater extent in the training, evaluation, and counseling of medical students and hospital corpsmen.

One might argue that Navy internships already have too many requirements and there is no room to accommodate others. However, there are many areas within the intern program that do not add to preparation for operational medicine and should be subject to review and possible exclusion. For example, while I am happy to have completed cardiac care and intensive care rotations, this training in critical care is, in the light of an operational framework, really a waste of time. I have used virtually none of the information covered in these rotations during the past 2 years. Similarly, pediatrics may be a very useful rotation for medical officers who intend to work in emergency rooms or clinics, but it is only marginally helpful in the adult-only world at sea.

At first glance, a good solution would be to have all Navy interns complete a transition year internship with decreased emphasis on critical care and pediatric medicine; however, most medical school graduates have a known specialty preference and would reject being forced into a general internship. Along the same lines, many incoming interns do not desire an operational tour and would much rather complete a residency uninterrupted.

The answer to these competing interests has been to modify a specialty internship so that it resembles a transition year internship. However, this effort to please everybody really pleases few and, more importantly, does not adequately train future GMOs. A better solution might be to have interns continue on a true specialty track *until* they find out whether or not they will receive orders to an operational billet. This information can easily be available by November of the intern year. If an intern will continue in a chosen specialty, no changes in his or her training program would be necessary. If the intern will report to an operational billet, there would be time to reevaluate his or her program and alter it so that psychiatry, orthopedics, and dermatology rotations would be included. In addition, once identified for operational billets, future GMOs could play a greater role in the training and evaluation of both hospital corpsmen and medical students.

Many interests compete in the effort to form an intern program. Specialists understandably wish physicians-in-training learn more about their field of interest. Moreover, the Navy needs to train specialists and retain credentials for specialty training programs. But no matter how compelling the argument is for specialty training and the status quo, it must nevertheless be weighed against the primary mission of a Navy intern program—to produce general medical officers. □

Dr. Massey is Destroyer Squadron 15 medical officer.

Medical Department's Senior Family Doctor Retires

ON 27 AUG 1993 RADM ROBERT W. Higgins, Deputy Surgeon General, Deputy Chief, Bureau of Medicine and Surgery, and Chief, Medical Corps, retired from active service. Shortly before RADM Richard I. Ridenour, MC, USN, relieved him, Dr. Higgins was interviewed by the Editor of Navy Medicine. Looking back at a long career that began in Vietnam as medical officer of a World War II era engine repair ship, USS Tutuila (ARG-4), Dr. Higgins spoke most proudly of his contributions and dedication to his specialty, family practice medicine.

Navy Medicine: Why did you decide to join the Navy?

RADM Higgins: I didn't start out with the intention of being a Navy man. Initially, I went to college to study automotive engineering, switched to philosophy, and then finally graduated in pharmacy. Then I went off and purchased what had been my parents' drugstore in Pullman, WA. I was married with a child and settled in a house. Then, I got this wild idea that I wanted to be a doctor.

While I had the store, I took some premed courses at Washington State University. I then applied to medical school and was accepted at the University of Washington. So, we made the

decision to leave the pharmacy to go to medical school. I finished that and went to Los Angeles County Harvard General Hospital for my postgraduate training in 1965.

At this time, Vietnam was beginning to heat up. I finished [postgraduate training] in 1966 and was drafted. By this time, I had three children, but doctors were prime targets for drafting. Truthfully, I didn't mind because the federal government helped me through medical school. I really felt as if I had an obligation to pay that back and I'm patriotic anyway.

I was actually drafted in the Army and received a set of orders. However, I discovered the Navy had one remaining spot for that month. I spoke to the guy who allocated positions and convinced him to pencil me in for the Navy. I guess the reason I wanted the Navy, and probably the best decision I made while in the military, was that my father had been a Navy pharmacist's mate in World War I and had made 20 round-trip crossings of the Atlantic in a troopship. I was really proud of that.

Where did you serve in Vietnam?

I spent a year as the ship's surgeon and senior medical officer aboard the *Tutuila* in the Mekong Delta. Actually, I was not only the medical officer

aboard, but the only Navy medical officer in the Mekong Delta.

What kind of sick bay did you have?

We had an operating room and a fair amount of equipment, but no gas anesthesia. We also had an examining room that could be used for minor surgery, an 8-bed ward, a pharmacy, and a lab; all were fairly rudimentary. The medical department consisted of myself and eight corpsmen, a dentist, and two dental technicians.

I guess you did your share of surgery abroad the *Tutuila*?

Just a few days after I got aboard ship we were inundated with casualties from an ambushed Green Beret operation. There were about 57 casualties. We had virtually no way to air evacuate them out of there as we were 50 miles off the coast of Vietnam and a long way from Saigon. So, we operated pretty steadily for a number of hours. Thank heaven for the good training the corpsmen get because my chief happened to be an OR technician. Rather than have him help me in the operating room, I had the dentist there, and I had the chief taking care of people with extremity bullet wounds. And everybody survived.



RADM Higgins accepts his retirement flag from HMCN (SW) Pat Burke. GEN Walter E. Boomer, USMC, Assistant Commandant of the Marine Corps looks on.

Did you stay on the *Tutuila* the whole time?

No, as the only Navy medical officer in the Mekong Delta, I spent a lot of time aboard small craft and helicopters flying around to see the Navy advisors to the Vietnamese Navy and Vietnamese Marines and to do MEDCAPs (Medical Civil Action Programs).

I got involved in what was called WHAMO (Winning Hearts and Minds Operation). It was a psychological warfare operation. We would go into a village in a known Vietcong stronghold and provide medical care, food, and help restore buildings and so forth. It was very successful.

What type of care did you provide during these operations?

It was hard to give any ongoing care in that situation. If there were any acute medical issues, you could treat them. But we didn't want to pass out a lot of medicine because we knew it would end up in the hands of the Vietcong. Nevertheless, there were some things we could help.

I had one interesting experience. During the first WHAMO trip we went into a little village in Bien Hoa Province which was really the stronghold of the Vietcong. In most of the villages, the people would crowd around to get medical care. In this village, everybody was standing back

and this worried us very much. Then two fellows brought forward an elderly lady. She was acutely short of breath and I thought we might be in trouble. It turned out she was having an acute asthma attack. I gave her some medicine intravenously to break up the attack. After about 20 minutes she was breathing fine and able to walk. After that, the people absolutely deluged us for medical care.

You got out in 1968 and went back into private practice. What got you interested in the Reserves?

Well, I saw my colleagues getting out of the Navy Medical Corps and selling their uniforms. I thought maybe

the Reserves had a real need for doctors. I guess I enjoyed the excitement and I liked the people I was working with in the Navy as much as anything.

Family practice was your specialty.

Yes. I think the boards for family practice were first given in 1969 or 1970. The first training programs for family medicine were just starting around '69, '70, and '71. I had helped get the University of Washington going on family practice through my membership with the Washington Academy of Family Physicians. Somehow, I guess that filtered back to BUMED and I was invited to come back on active duty to set up a family practice residency program.

When was that?

Probably the fall of 1970 or the spring of 1971. My answer was thanks but no thanks because I was in private practice. But I began to look forward to my 2 weeks active duty with the Navy and began to rethink that. And BUMED kept calling. Finally, I said maybe I will do it; that was a major decision in our lives. Now, I was leaving an active practice in which I was very successful to come back in the Navy. Very honestly, my wife gave up more than I did because she was very active in community affairs.

Where did you go?

To Charleston, SC, in August 1972 and started a family residency there. Then I left Charleston for Camp Pendleton, CA. At that time CAPT Clint Lowery had been the XO at Charleston and he went out to Camp Pendleton as CO. The family practice program there was having some problems and CAPT Lowery convinced me to go and help straighten things out.

What were some of the other big challenges?

We tightened up the academic part of the family practice program. Family practice depended upon the other departments for a lot of the training and to actually run the program. They were glad to see us come in and take it over.

What differences did you find in being at Charleston dealing with a Navy population and then dealing with a Marine population at Camp Pendleton?

There were some differences. The Navy population we served were mainly submariners. They're a very stable population with larger families then the rest of the Navy so we had a lot of pediatrics and obstetrics for the residents. Moreover, these Navy people were on a set schedule. They could tell you if they were going to be home 3 years from then or not because of the schedule of deployments on the SSBNs [Fleet Ballistic Submarines].

At Camp Pendleton, which is a large Marine Corps base, the average age was probably about 18 or 19 years of age. There were a lot of young people with very different medical problems—mostly athletic injuries and things like that. The Marine Corps understands that their most important asset was their people. They really took care of their people and we helped them. We were always in their good graces.

How long were you at Camp Pendleton?

I was there for 2 years. From there, I went to Bremerton, WA, in August 1980 to start a family practice residency program.

While at Bremerton I was elected to the Board of Trustees for the American Academy of Family Physicians. I soon became chairman of the board,

which is the platform to run for president of the Academy. Although I wanted to run for president, BUMED wanted to send me to command Jacksonville, FL. I talked to VADM [Lewis] Seaton, who was Surgeon General at the time, and he decided that I ought to run for president instead of going to command right then. So I ran and won.

How did that procedure work?

As chairman of the board I was very active in the affairs of the academy. The chairman basically runs the academy business. When I became president-elect, I was director of clinical services at Bremerton. I knew that being president was a full-time job, so I talked to people at BUMED and personnel about how we were going to do this. They found a precedent where the Navy had sent ADM [Richard] Byrd on a year's leave of absence to go to the North Pole on an expedition funded by the Ford Foundation. The Secretary of the Navy extended me a leave of absence without pay that would be funded by the American Academy of Family Physicians.

It must have been quite an honor.

I was the first military medical officer to serve as the president of a national professional society. It's the world's largest medical professional society with about 70,000 members. It was a distinct honor. My wife and I were away from home 300 days that year. It was an incredible experience. I was on television programs—The Today Show and CNN—and I gave numerous speeches that year.

Since it was a leave of absence, were you considered a civilian?

No. I wore my uniform at every opportunity so the Navy would get full benefit of the fact that a naval officer was head of this organization. I would



RADM Richard Ridenour (left) takes the helm from retiring Deputy Surgeon General Robert Higgins.

like to think the Navy got a lot of good press out of it.

What did you do next?

After being a staff physician at Bremerton from December 1985 to August 1986, which enabled me to see patients everyday and help out the residents, I went to Camp Pendleton as commanding officer. It was there I was selected for admiral, which came as quite a shock. I asked VADM [James] Zimble, the new Surgeon General, if I could be medical officer of the Marine Corps. Fortunately, he let me do that.

What was that like?

That was the best job in Navy medicine. I think it's because the Marines are a very pragmatic group. They know what's right and they do it. They asked a lot, but they do a lot themselves and enjoy the work. They understand that their most important asset is their people and they really

take care of them. When I was CO at the hospital at Camp Pendleton, and a marine was admitted to that hospital, his company commander, regimental colonel, and often the commanding general would come in, not for show, but because they were generally concerned about that marine. It was a real joy to work with them.

What kind of issues did you deal with?

There were a lot of issues. For one, the Marine security guard battalion down in Quantico, VA, that trains the Marine security guards for the embassies around the world, had a lot of unresolved medical issues that I had to straighten out with the State Department. Another example was putting more Navy personnel and disbursing clerks in the Marine Corps, thus freeing corpsmen from paper shuffling.

The Field Medical Service School was one of our big successes. The training was too short, so corpsmen

would arrive at their Marine Corps assignments not fully trained. Therefore, the Marines had to take corpsmen out of line units to train the people who just came. I got the Marines to extend the training by 1 week which meant that they came out fully trained.

I also helped solve the recon battalion corpsmen problem. The Marine Corps' recon battalions and the SEALs are the main special operations units we support. Although the corpsmen training was the same, the SEALs had the priority for manning, leaving the recon units chronically short of trained corpsmen. We decided that the recon battalions' corpsmen did not need exactly the same training as the SEAL's corpsmen. We therefore were able to establish a new Navy enlisted code (NEC) for recon battalion corpsmen and set up a different training program. Now we have enough corpsmen with the recon battalions. They are not competing with the SEALs and they are trained specifically for what they do.

How did you become VADM Zimble's deputy?

He told me in May or June 1989 that he wanted me to be his deputy. We were starting as BUMED again on 1 August and his headquarters as Surgeon General would be at BUMED instead of at the Pentagon. BUMED is a very different animal from the Naval Medical Command. Zimble told me he expected me to be the Deputy Surgeon General, know everything that he did, and also be Deputy Chief BUMED, basically to be responsible for running Navy medicine on a day-in and day-out basis; and, by the way, also to be Chief of the Medical Corps.

And there were two other titles too. There was OP-093B and Deputy Director of Naval Medicine.

I hated to leave the Marine Corps, but the Commandant, General [Alfred] Gray, was very gracious. He gave me a Legion of Merit when I left and also told me that I had a unique opportunity to go to BUMED and answer all the letters I had sent there for the past 2 years as Medical Officer of the Marine Corps.

So, you arrived here when BUMED was back in operation. How did you feel about that?

It was the first time that both VADM Zimble and I had ever served at BUMED. So we came in without really any preconceived notions of how it ought to run. We knew how it had run and we were not satisfied with that. We both felt strongly that BUMED is a service organization which exists only to serve the people out in the field. That was not truly the feeling before; the people at BUMED were very good, but the organization seemed to function more as if the people out in the field were working for BUMED, instead of vice versa.

VADM Zimble, much to his credit, became a zealot for total quality leadership and I think that really helped a great deal. We began to work on a strategic plan and where we were going and then focused our efforts.

However, we were somewhat side-tracked with Desert Shield/Storm and our plans had to be put on hold for a while. Desert Shield/Storm took an enormous effort but it brought BUMED together as a family because that effort could not have been done by any individual. All the codes had to work together to make it all work.

Wasn't that whole operation a validation of why the Medical Department exists?

Navy medicine did an outstanding job. While it would be very nice to take credit for the people we had at BUMED at that time, a lot of effort had been done 10 and 15 years before that. We had two hospital ships, fleet hospitals that we could mobilize, a system to mobilize people, and a system to call up reserves. It really was a fantastic experience to go through that and it validated, as you said, what we're all about and why we exist.

Then, VADM Zimble left and VADM [Donald] Hagen became Surgeon General. It was thought to be a more peaceful time but there still are hot spots throughout the world. Since Desert Storm, we've deployed as much as 40 percent of the Medical Department in operations around the world: Haitian refugee relief in Guantanamo Bay, Somalia, Hurricane Andrew, the typhoons in Guam and Bangladesh, to aid the Kurdish refugees, and in the Adriatic with the Balkan states problem.

Nevertheless, the calmer times have allowed us to look at BUMED structure and function and enabled us to take a systems approach to problems and issues. For example, we now have a Medical Education Policy Council which centralizes and provides uniformity to graduate medical education. It looks at overall requirements of Navy medicine and then trains people to those requirements. We also have a Technology Assessment Committee to look at how to integrate present and upcoming technology into Navy medicine.

What about downsizing?

This is an important and difficult task. Downsizing and budget cutting make our jobs much harder. Even though we are going through these and the BRAC (Base Realignment and Closing), we must continue to support the fleet and the Marines. Addition-

ally, we have some hospitals that need some work and some clinics need to be expanded, especially when base closings put more people in an area. We need to learn to work with civilians better, although we're doing a pretty good job right now. And we need to evaluate outside CONUS medical support carefully. The Clinton administration's health care reform could be a plus or a minus depending on its form. Readiness is such a big part of our function and there is no comparable function on the civilian side. We must also keep readiness as our focus.

What are some of your proudest accomplishments as Deputy?

Probably the biggest impact has come by being Chief of the Medical Corps. I essentially became the first Chief of the Corps. I worked hard to instill a new esprit de corps that was lacking. Another important accomplishment was the reorganization of Specialty Advisors role in BUMED (for all corps). They now report to the corps chiefs. This change allowed them to become an integral part of the Executive Management team in Navy medicine and that has paid big dividends and made a difference in everything from Desert Storm to community involvement.

What are some of the issues your successor will face?

He should keep pushing to get the best people out to operational billets. This increases movement between the hospital and operational sides so we get people with both types of experience. Moreover, he should nurture the Executive Medicine Training at the Navy Postgraduate School. Of course, the structure of BUMED could use some fine-tuning, and we should always be examining the lessons learned from Desert Shield/Storm.—
JKH

Naval Medical Research and Development Command Highlights

Bethesda, MD

● Unaided and Aided Night Vision Training

NMRDC's Aviation Medicine and Human Performance Program concentrates on the interaction between military personnel and their working environments. The Naval Aerospace Medical Research Laboratory (NAMRL), Pensacola, FL, in collaboration with the Naval Aerospace and Operational Medical Institute, developed Unaided and Aided Night Vision Training Kits to teach aircrew personnel the idiosyncrasies of night vision. The Unaided Night Vision Training Kit focuses on ways to exploit the strengths of the human visual system in dark operational environments. Though demonstrations involving the central or night blind spot, the physiological blind spot, silhouette recognition, autokinesis, the Purkinje Shift, false horizons, etc., each user experiences several visual illusions characteristic of unaided night operations. The Aided Night Vision Training Kit utilizes electro-optical (EO) devices. The kit illustrates the change in image resolution caused by decreased illumination, the effects of strobes and incompatible lighting, and the importance of correct adjustment of EO devices prior to use. The kits were originally designed for aircrew personnel and are applicable to many warfare specialties. Using input provided by the Army Research Institute and the Army Rangers, the kits are currently being modified for use by Marine Corps and Army ground forces. For more information contact CDR T. Singer, MSC, NMRDC Research Area Manager for Aviation Medicine and Human Performance at DSN 295-0787 or Commercial 301-295-0878.

● Regional Disease Surveillance Efforts in Indochina

The Naval Medical Research Unit No. 2 (NAMRU-2), Jakarta, Indonesia, is responsible for infectious diseases research in support of Navy and Marine Corps operational activities in Southeast Asia and the western Pacific. NAMRU-2 is expanding regional disease surveillance efforts into Vietnam and the Lao People's Democratic Republic. In Vietnam, Navy researchers are working

with host medical institutions in studying the epidemiology of hepatitis, malaria and drug-resistant tuberculosis. Also, NAMRU-2 researchers are providing training in field applied epidemiology and establishing a diagnostic capability in country. In the Lao People's Democratic Republic Navy researchers are assisting host institutions in studying hepatitis E and blood-mediated viral diseases. For more information contact CDR C.J. Schlagel, MSC, NMRDC Research Area Manager for Infectious Diseases, DSN 295-0881 or Commercial 301-295-0881.

● 3-Dimensional Imaging for Surgical Treatment Planning and Oral Diagnosis

Recent computer hardware and software advances have made 3-dimensional (3-D) visualization technology available on the clinical desktop workstation. Researchers at the Naval Dental Research Institute Detachment, Bethesda, MD, are working with surgeons and clinicians at the National Naval Medical Center, Bethesda, MD, to determine the potential applicability of this technology for future surgical treatment planning and oral diagnosis at Navy treatment facilities. The goal of the evaluation is to determine how much more clinically-relevant information can be extracted from the same radiographic exposures routinely ordered for medical/dental examinations. No additional radiation or patient involvement is required to make 3-D images, since all image data are retrieved from archived magnetic tapes. Active 3-D images are created using clinical image data from computer-assisted tomography (CT) 9-track tapes. The raw CT image data are translated into 16-bit raster data, then mapped into 8-bit images. Converting CT images to enhanced 3-D images takes approximately 2 hours with current computer hardware. The results are clinical images ready for interactive manipulation. Computer "dissection" of images and volume subtraction routines can show hidden problems after bony structures are disarticulated on the monitor. Images can be rendered with soft tissue intact or removed. For more information contact CAPT J. Cecil, DC, Research Area Manager for Oral Health Research, DSN 295-1825 or Commercial 301-295-1825.

Quality Improvement in Food Management

CDR Martha J. Lamb, MSC, USN

Photos by Joy Caldwell



Food Management Process Action Team uses a thermometer to test food temperature. Team members are (left to right): Dorothy Cox, CDR Martha Lamb, Sandra Ward-Liming, LT Nancy Marshall, Anne Robertson, Bernadette Ezernack, and Michael Estes.

NAVAL HOSPITAL SAN DIEGO, CA, is a Navy Medical Department pioneer in implementing the principles, methods, and tools of total quality management (TQM) and total quality leadership (TQL).

The primary mission of the hospital is to provide a comprehensive range of emergency, ambulatory, and inpatient health care services to active duty Navy and Marine Corps personnel, active duty members of other federal uniformed services, and other eligible beneficiaries.

With an operating bed capacity of 560, the hospital and its eight Branch Medical Clinics serve an eligible beneficiary population of approximately 400,000 plus patients. Outpatient visits to the main hospital and clinics exceed 100,000 per month. The command is staffed by approximately 4,500 mili-

INFORMAL FOOD MANAGEMENT PROCESS ACTION TEAM

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
RECEIVES FOOD CART	VERIFY DIET ON WARD	VERIFY ORDER TO CART	RE THERMALIZE	DELIVER
1.1 PLACE IN REFER	2.1 RECEIVE UPDATE TO DIET ORDER FROM WARD	3.1 VERIFY FOOD TO PATIENT 3.2 MODIFY FOOD TRAYS 3.3 CALL DIET OFFICE WITH CHANGES- ADMISSION AND DISCHARGES	4.1 TAKE CARTS FROM REFER 4.2 PLUG IN FOOD CART 4.3 TEST FOR HEAT 4.4 TRAY COMPLETE 4.5 PLACE HOT & COLD DRINKS ON TRAY	5.1 VERIFY ROOM TO PATIENT NAME TO MENU 5.2 PASS TRAY TO PATIENT

CHART (A)

tary and civilian employees.

On 4 Oct 1989, then Commanding Officer RADM Richard B. Halder, having just returned from the annual Navy Surgeon General's Commanding Officers' Conference, announced to the command that the naval hospital would begin its journey toward TQL and he would personally lead the way.

The success of the hospital's transformation to TQL may be attributed to the progressive leadership provided by the commanding officer, the coordination by a full-time TQL Special Assistant, the support and resources provided by 25 members of the Executive Steering Committee, the efforts of four fully functioning Quality Management Boards, and the involvement of hundreds of employees on 30-40 separate Process Action Teams.

One Process Action Team (PAT) chartered by Halder used the Quality Improvement Process effectively to evaluate and improve patient meal

temperature. Led by the head of the Food Management Department, CDR Martha Lamb, MSC, the multi-disciplinary PAT was comprised of a chaplain (a former hospitalized patient), two nurses, two corpsmen, a ward clerk, and three food service ward diet aides. The PAT was facilitated by a health care planning specialist.

To familiarize themselves with the existing process, team members toured the patient food service operation and taste-tested patient meals. The process uses a cook-chill food technology whereby semiprepared and prepared foods are rapidly chilled, portioned, and plated in a chilled state onto especially designed individual patient plates and meal trays in the main galley. Trays are then placed in food carts and delivered via robotic automated guided vehicles to satellite inpatient ward food service pantries. Walk-in refrigerators in the pantries hold the carts for up

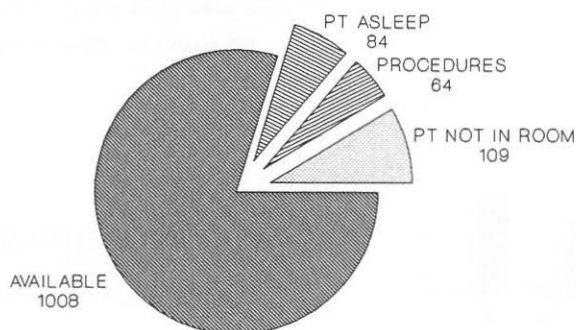
to several hours.

Just prior to meal times, the food carts are removed from the refrigerators and plugged into wall-mounted power supply units which electrically heat foods on entree plates and in soup bowls. Plates and soup bowls contain electronic sensors and heating elements which heat foods on the plates and bowls to more than 140°F. After rethermalization, ward diet aides deliver meal trays at prescheduled times to patients' rooms.

The PAT developed a top-down flow chart to define the "ideal" patient rethermalization and meal delivery systems and then described the existing system using detailed flow charting principles (Chart A).

Brainstorming for potential problems and multivoting as to why patients' hot foods may not meet the Navy Preventive Medicine standards of 140 degrees, the top three suggested problems were:

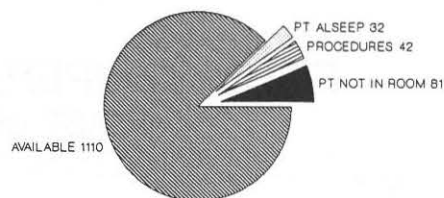
FOOD TEMPERATURE PAT BREAKFAST



20 % NOT AVAILABLE FOR BREAKFAST

1 MAR TO 6 MAR

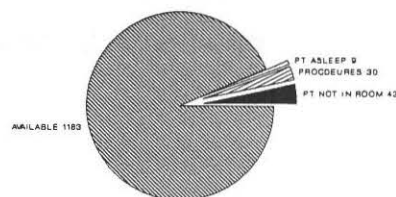
FOOD TEMPERATURE PAT LUNCH



13 % NOT AVAILABLE FOR LUNCH

1 MAR TO 6 MAR

FOOD TEMPERATURE PAT SUPPER



7 % NOT AVAILABLE FOR SUPPER

1 MAR TO 6 MAR

CHART (B)

- Ward diet aides were constantly being interrupted by nursing personnel with diet order changes/patient room changes while meals were being delivered.

- Patients were not always in their rooms at meal times.

- Patients were having some type of in-room procedure (blood being drawn, vital signs taken, etc.) when meals arrived.

To validate the PAT's perceived problems, the ward diet aides were asked to gather data for 1 week on all meal delivery problems they encountered while delivering meals to patients. Data showed that on the average, patients were not available for their meals 20 percent of the time for breakfast, 13 percent for lunch, and 7

percent for supper (Chart B). Patients were either not in their rooms, asleep, or having some kind of in-room procedure performed when the meals arrived in their rooms.

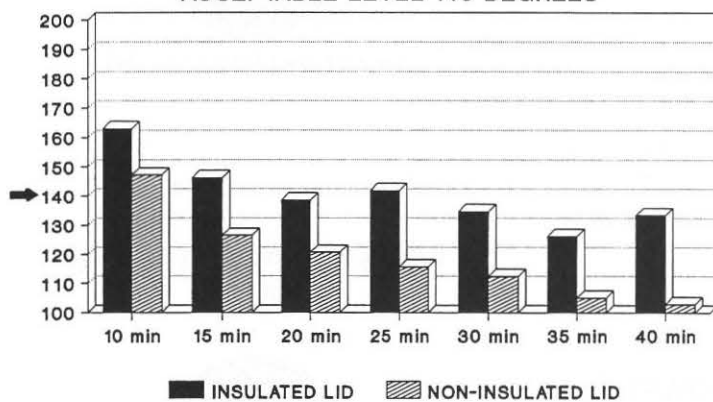
The percent of patient availability differed as to the meal being served and to the ward with the greatest number of patients. Data collection revealed that patients unavailable for breakfast were: maternity (36 percent), orthopedics (35 percent), oncology/medicine (24 percent), and medicine (20 percent). For lunch, the greatest number of patients unavailable for meals was on the medicine ward (22 percent), and for supper, the orthopedics ward (15 percent).

To obtain patients' perspectives, patients were asked to complete sur-

veys asking if their food was hot, and whether or not they were in their rooms and ready to eat at meal times. Over a 4-day period, survey results showed 978 patients felt their food was hot while 40 patients felt their food was not hot enough. Almost all patients stated they were in their rooms and ready to eat at meal times. When maternity ward nurses learned their patients were unavailable for breakfast 36 percent of the time, they changed their ward routine to ensure patients could eat their breakfasts on time (or when delivered).

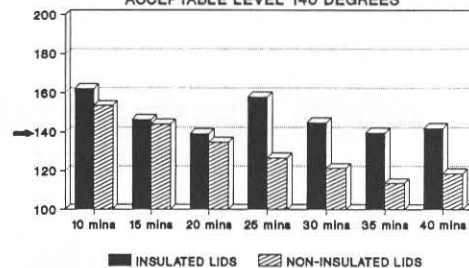
To evaluate whether or not patients' hot food temperatures met the standard of 140°F, the PAT conducted time and temperature studies on sample patient meals. They compared the

FOOD TEMPERATURE PAT ROAST BEEF ACCEPTABLE LEVEL 140 DEGREES



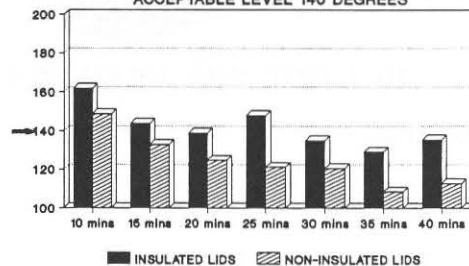
DEGREES

FOOD TEMPERATURE PAT MASHED POTATOES ACCEPTABLE LEVEL 140 DEGREES



DEGREES

FOOD TEMPERATURE PAT GREEN BEANS ACCEPTABLE LEVEL 140 DEGREES



DEGREES

CHART C

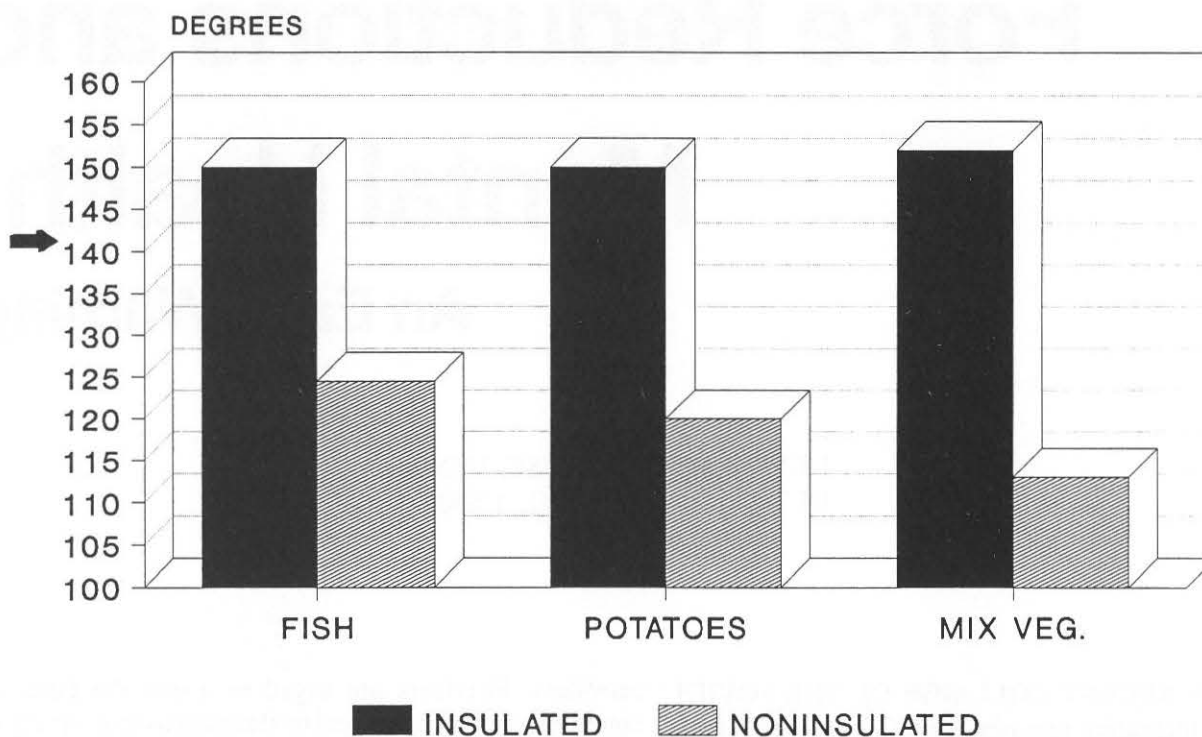


LT Nancy Marshall and Food Services employee Bernadette Ezernack serve a patient a meal kept hot with new insulated lids.

heat retention capabilities of patient entree plates covered by noninsulated lids currently in use against entree plates covered by "test" insulated lids. All meals were rethermalized at the same time and then paired off in seven groups, each group containing one meal covered by a noninsulated lid and one meal covered by an insulated lid.

The first group's food temperatures were taken after rethermalization, with subsequent groups tested in 5-minute intervals. The last group was tested after having set for 40 minutes following heating (Chart C). Results showed that foods under the noninsulated lids met 140°F 25-40 minutes after heating. Since each entree plate is designed to rethermalize independently of other plates, the plates' electrical

PATIENT FOOD TEMPERATURE PAT 30 MINUTE LID COMPARISON



ACCEPTABLE LEVEL 140 DEGREES

CHART D

sensors provided another variable for the food's temperature as some plates can actually heat to hotter temperatures than others.

A second test was conducted using identical chilled foods and the same entree plate but first covered by a noninsulated lid and rethermalized and then covered by an insulated lid and rethermalized. Thirty minutes after rethermalization, foods under the noninsulated lid were at an unacceptable 125°F while foods under the insulated lid were at 150°F, exceeding the desired temperature standard by 10°F (Chart D).

A ward diet aide study indicated that it took approximately 1 minute for delivery of each patient tray. With patient ward census ranging from 20 to

40 patients, under "ideal" conditions meal delivery would take 20-40 minutes. Under the existing system where appropriate food temperatures are maintained for only 10-15 minutes after heating and some patients are not in their rooms or ready to eat at meal time, some patients would routinely receive foods not meeting temperature standards.

The PAT proposed that the command purchase insulated entree plate lids from a fund set aside for quality improvements. The lids were approved, purchased, and put into use in a matter of months. Food temperatures have been continuously monitored using the new lids. The most recent patient survey results show 99 percent of patients were pleased with

the food temperatures.

Also proposed and approved was establishing cut off times for diet order changes to eliminate making changes during meal distribution. Diet order changes made after cut off times now go into effect at the next meal. The PAT advised looking into the possibility of scheduling inpatient procedures so that as many patients as possible would be available for meal time.

The team's storyboard was placed on display in the hospital lobby as an example of the outstanding use of quality improvement principles. □

When this article was written, CDR Lamb was head of the Food Management Department, Naval Hospital, San Diego, CA.

Force Reductions and Mental Health: An Early Warning

LT W. Brad Johnson, MSC, USNR
LT Taylor L. Porter, MC, USNR

WITH THE RECENT COLLAPSE OF THE SOVIET Union and increasing pressure from Congress to reduce spending, the Defense Department is preparing for significant cuts. While the Pentagon anticipates reducing the number of active duty military personnel to 1.644 million by the end of 1995, the reductions may eventually run much deeper.

These personnel cuts are unique in recent military history in that they target specific job categories rather than simple seniority or performance ratings. If current attempts at reduction fail to keep pace with shrinking budgetary requirements, it is likely that a significant proportion of career-minded military personnel will be involuntarily eliminated from active duty.

Job loss or "employee displacement" has been demonstrated to precipitate great personal distress, reduce future employability, and place the displaced member at increased risk for physical and mental health problems.⁽¹⁾ The *Diagnostic and Statistical Manual of Mental Disorders*⁽²⁾ ranks job loss as a "severe" psychosocial stressor. Literature from organizational psychology⁽³⁾ suggests that reductions in force are difficult to address, much less to handle efficiently and humanely. It is the purpose of this article to briefly examine the evidence pertaining to the impact of job loss on mental health. Further, the authors discuss the implications of force reductions for health care

providers. Providers are urged to assess the potential contribution of job loss (real or threatened) to a variety of psychophysiological problems. It is hoped that this discussion will heighten awareness of these issues as health care providers prepare to deal with an increasing number of military personnel threatened with the prospect of unemployment.

Job Loss and Mental Health

Broad-based demographic research in the United States and England show extremely high positive correlations between annual unemployment rates and admissions to psychiatric hospitals.^(4,5) Significant decrements in the mental health of the soon-to-be or recently unemployed exist in all age groups but are particularly noted in middle-aged men. Large numbers of those experiencing job loss report serious physical and/or emotional strain which becomes more pronounced with longer periods of unemployment.

More specific investigations have demonstrated that in comparison to stably employed adults, the recently unemployed show significant elevations on measures of depression, anxiety, somatization, and self-reported physical illness.^(6,7) Further, the unemployed were three times as likely to show extreme scores (serious pathology) on mental health measures.⁽⁶⁾

The causal mechanisms responsible for the mental health impact of job loss are less well researched. Richard Price has suggested that these mechanisms include: the effects of financial strain, marital difficulty and conflict, reduced affiliation in personal and social networks, and financial loss events such as loss of a house or personal property.(8) Others have echoed the significance of financial strain in precipitating mental health disruption. Further, it is likely that job loss creates heightened vulnerability to other stressful life events.(1,7) In addition, military personnel, having been removed from the civilian job market for some time, are likely to have little recent experience in job searching, job skills which may not readily transfer to civilian job descriptions, and the high probability of low self-esteem and self-blame for unemployment ("if only I'd had better evaluations").

Investigations of the impact job loss has on the member's family(4,8-9) have indicated clearly that joblessness is more than an individual problem. Job loss has powerful negative effects on families as well. Family-related problems include increasing tension, conflict and stress-related symptoms. In one study, unemployed workers, compared to an employed control group, reported more conflict with their spouses and with their children, and reported they were more likely to have hit, slapped, or spanked their children.(9)

Finally, it is important to consider the impact of job loss on identity in the active duty servicemember. In committing to a career in the military, the servicemember has already endured and perhaps adjusted to loss of civilian identity, isolation, and loss of support from friends and family.(10) Involuntarily displaced servicemembers are at high risk for a significant experience of loss as they are forced to give up their military identity. This is especially true in the case of those active duty members who have overcome chaotic or dysfunctional pasts via powerful identification with the military and other military personnel. Research suggests that employees laid off in force reductions have difficulty acknowledging the loss and frequently attempt to maintain their old job-related identities in spite of that fact that this is dysfunctional and often interferes with effective transition to new employment.(11) Winegardner et al.(12) in a fascinating article, found that the recently unemployed shared the same pattern of feelings about their job loss as do the terminally ill. Finances, self-esteem, depressive emotions, and problems communicating with family and friends were among the most disabling consequences of their loss. Disruption of identity is likely to be most pronounced in the "anticipatory phase" of job loss prior to actual unemployment.(11) During this phase, employees

anxious about potential loss, are likely to experience depression and manifest significant irrational job-seeking behavior.

Implications of Force Reductions for Health Care Providers

All medical and mental health providers are likely to evaluate increasing numbers of military personnel presenting for services in the context of job loss or anticipated job loss. In this landscape of reduction and resulting anxiety, all providers would be wise to briefly inquire about the patient's job status and his or her perceptions of job security.

Providers in all settings should be alert to the variety of symptomatic presentations in patients undergoing such loss. In particular, overt symptoms of depression (dysphoria, hopelessness, insomnia, lethargy, etc.), anxiety, substance abuse (alcohol in particular), family conflict, and any form of suicidal ideation should be cause for concern and further inquiry or referral to a mental health provider. In medical settings, it is most probable that job loss-related symptoms will be psychosomatic in nature and may include tension and migraine headaches, angina pectoris, tachycardia, cardiospasm, gastric ulcer, nausea and vomiting, sacroiliac pain, and neurodermatitis.(2)

Although the majority of military personnel will cope with job loss without need of mental health intervention, many will require or at least benefit from such intervention. One deleterious effect of the climate of reduction will be increasing avoidance of these very services. As competition increases for fewer billets, personnel are likely to avoid mental health contacts, including needed alcohol treatment, as a means of "protecting" their medical records from career damaging documentation. Unfortunately, these perceptions may be largely accurate. A study is currently under way at Pearl Harbor to evaluate the presence of mental health stigma within the line community. As cut-backs continue, those with any history of mental health care will run an increased risk of being forced from active duty.

In light of the foregoing, there are at least two salient issues which emerge for the health care provider. First, as mental health providers, we have discovered that severe suicidality is not uncommon among those being involuntarily forced from the military (i.e., via medical boards). Providers may begin to see an increasing number of suicidal patients not motivated by external gain, but by hopelessness and despair. It is not uncommon for such symptoms to become exacerbated by a lengthy PED (Physical Evaluation Board) or separation procedures. Secondly, as military personnel themselves, providers may

fear for their own job stability. Thus, the process of separation may become less objective and more personalized. There is increasing risk that, because of their own job loss concerns, providers will become more inclined to separate all patients, or experience great difficulty separating any patient from duty (survivors' guilt).

On a positive note, providers are likely to see fewer patients "desperately wanting out" of the military. Such patients, elsewhere described as the "walking wounded," often present with personality disorders and are difficult cases to manage.⁽¹⁴⁾ Instead, providers will have greater opportunity to provide services to personnel dealing with job loss and other life transition issues. These members are likely to be much more motivated for treatment and more likely to benefit from established interventions. Thankfully, research suggests that prevention and early intervention efforts may largely mitigate the debilitating effects of job loss.^(1,8,13) These efforts include early identification and intervention for symptoms related to the job loss, assertiveness training, job-seeking training, positive social reinforcement, and inoculation against setbacks. Providers will need to become increasingly aware of job-related stress, vocational rehabilitation opportunities and the benefits of collaborating with external organizations such as VA hospitals. These steps will increase the rate of positive outcomes for an increasingly common patient, the career military member losing his or her career.

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Aeromedical Problems Course

The annual Aeromedical Problems Course and Aerospace Medicine Technician Problems Course will be sponsored by the Naval Aerospace and Operational Medical Institute (NAMI) 7-10 Dec 1993. The theme is "Refugee Medicine." The objective is to assemble as many naval aeromedical professionals as possible and disseminate and share current, relevant, and useful information that will heighten our ability to provide "support" to the fleet.

For information on how to register for this course, please contact LCDR Robert Matthews or Ensign Cynthia Chargois, Academics Department, Naval Aerospace and Operational Medical Institute, 220 Hovey Road, Pensacola, FL 32508-1047; phone number (904) 452-2457/2458.

Managing Navy Medical Treatment Facilities:

The Role of Executive Education

Benjamin J. Roberts, Ph.D.
Alice M. Crawford, M.A.
Kenneth L. Orloff, M.S.

NAVY HEALTH CARE AS A DELIVERY system is rapidly evolving to accommodate changes in patient needs and demands, society's views on quality and individual entitlement and government initiatives regarding delivery standards and cost containment. Events such as these have come together to create a turbulent environment for Navy medicine. Examples include the base realignment and closure process, continuing congressional interest, implementation of the Coordinated Care Program, sophisticated management information technologies, and various Department of Defense (DOD) initiatives that offer additional managerial challenges. As a result, Navy medicine executive managers are confronted with a consistent need to expand and fine tune their leadership and

managerial skill and expertise in many areas previously considered extra-professional.

Toward this end, the Navy initiated a program to meet the specific needs of Navy Medical Department executives. In May 1992, the Bureau of Medicine and Surgery (BUMED) entered into partnership with the Naval Postgraduate School (NPS), Department of Administrative Sciences, to develop an Executive Management Education (EME) Program. In response, a two-phased program was initiated.

Phase I identified Navy medicine's unique needs for executive management knowledge, skills and abilities (i.e., competencies), and translated those needs into education/skill requirements for current and prospective executives. Phase II consists of

the design, development, and conduct of customized programs in executive management to provide managers in Navy medical treatment facilities (MTFs) with a cost-effective means of acquiring and reinforcing those competencies.

This article will reveal the findings of Phase I efforts directed toward identifying Navy Medical Department executives' perceived competencies; those both possessed and needed for fulfilling present positions in Navy medicine.

Needs Assessment

Phase I of the program has been completed. It represented a needs assessment that consisted of 80 interviews with Navy medicine executive managers which were conducted on

TABLE 1
Percent Reporting That Skill Requirements Are "High" in Each Knowledge Area

	Percent
Management of Change/Technology	94
Conflict Management	92
Communications	91
Individual Behavior	90
Group Dynamics	89
Ethics	88
Systems Perspective	88
Organizational Design	88
Quality Management	81
Personnel Management	81
Decision Making	80
Legal Issues	72
Productivity Management	70
Strategic Planning	64
Alternative Health Care Systems	64
Financial management	58
Labor/Management Relations	56
Information Management	56
Facilities Management	55
Quantitative Analysis	55
Materials Management	55

site at 12 Navy MTFs throughout CONUS. The results of these interviews, coupled with insights from successful "managed care" components in the civil sector and the Medical Corps Quality Management Board (QMB), formed the basis of a survey questionnaire, which was designed to fulfill three objectives:

- assess incumbent and prospective MTF commanders' perceived educational needs and managerial capabilities,
- inventory their previous management development experience and education, and
- provide a database to guide EME program development.

The survey questionnaire contained 60 questions in which respondents were asked to evaluate their current individual skill levels, and then to evaluate the generic skill requirements of the jobs they occupy. The competencies and skills addressed across the 60 questions were subsequently clustered into 21 skill areas to achieve compatibility with an existing DOD classification of skill areas.

The questionnaire was distributed to 720 Navy Medical Department executives, including all "sitting" commanding officers, executive officers, directors, and all those screened for CO and XO billets. In all, 66 percent (476) of survey recipients responded

to the questionnaire. Medical Corps constituted 32 percent (154); Medical Service Corps, 34 percent (164); Dental Corps, 20 percent (97); and Nurse Corps, 11 percent (50) of responses received. The survey results will drive the follow-on development of executive management education programs tailored to meet the unique needs of Navy medicine, in general, and those of individual executives, in particular.

Survey Results

Skill Requirements. One of the most sought after findings of the needs assessment was to provide an estimation of the requirements for each management skill area included on the survey. For this purpose, the top three survey response categories on an 11-point scale were used to indicate a "high" requirement level for a particular skill area.

Table 1 shows the 21 management skill areas with the percentage of respondents who reported the requirements for each area as "high." Over half those taking the survey rated the skill areas as highly important for executive management of MTFs, although not equally. In fact 11 of the 21 skill areas were rated as a "high" requirement by at least 80 percent of survey respondents.

In addition, it is interesting to note that the skills rated most important to function as an executive at an MTF, (e.g., management of change, conflict management, etc.) tend to be skills for which the CO typically has no "in-house" expert or principal advisor. In contrast, the skills that fewer people reported as highly required (e.g., financial management, information management, etc.) are areas where expertise is usually readily available within a command. Thus, it stands to reason that executives place the most importance on "nonshared" skill areas.

TABLE 2
Percent Reporting Gaps in Management Skill Areas

	Percent
Ethics	45
Systems Perspective	46
Group Dynamics	51
Individual Behavior	51
Communications	54
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Skill Requirements Perceived by Groups

An additional research objective was to examine how the perceptions of skill requirements might differ as a function of characteristics of the survey respondents. Variability by rank, corps, and position were considered.

The ranks considered ranged from admiral to that of lieutenant commander. Overall, the percent of individuals by rank reporting "high" required knowledge levels were closely clustered. Ratings by admirals are highest in every category (100 percent), followed by captains (87 percent), commanders (87 percent), and lieutenant commanders (86 percent), respectively.

When differences by corps are taken into consideration, again we found a somewhat tight clustering with the exception of members of the Nurse Corps who have a slightly higher percentage of their group who fall into the "high" category when evaluating required knowledge levels. Thus, the pattern, by corps, appears as follows: Nurse Corps (92 percent), Medical Service Corps—health care administrators (88 percent), Medical Service Corps—allied health (87 percent), Medical Corps (87 percent), and Dental Corps (84 percent).

Our definition for position focused on those currently serving at MTFs: commanding officers of more than 12 months on the job (> 12) and less than

12 months (< 12), executive officers of more than 12 months and less than 12 months, directors, and department heads. Again, similar findings were obtained when we considered the percent reporting "high" required knowledge levels by position with a narrow clustering of all positions falling between 86 and 90 percent.

Thus, when requirements are considered, all groupings, whether by rank, corps, or position, are remarkably similar in agreement as to the importance of all 21 skill areas in their present work capacity. The data confirm that the design of the EME program should include all 21 skill areas.

Needs for Management Education

A cardinal objective of this research was to determine the perceived need for education in each management skill area surveyed. To address this issue (since respondents were asked to indicate both the required skill level necessary in performing their work as well as their current skill level), the current skill level was subtracted from the perceived required skill level for each of the items within the 21 categories, for each individual. This procedure created deltas, which reflect the need (expressed as a gap) for education. Of primary interest to this research are positive deltas (required skill is higher than the current skill level), thus providing a measure of the gap and implied educational need.

Table 2 shows the 21 management skill areas with the percentage of all respondents who reported a gap in their knowledge for each area. Overall, individuals reported knowledge gaps in all of the skill areas. There is no single skill area in which responses do not indicate a need for further management expertise. Additionally, the need is not perceived as equal for each of the areas. The figures vary

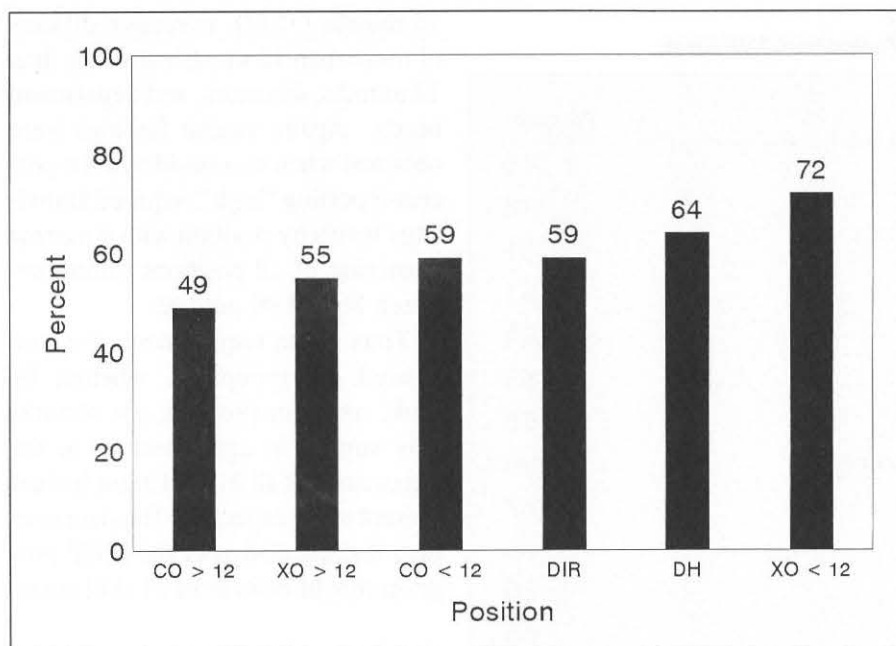


Figure 1. Percent Reporting Management Skill Gaps, By Position

from 45 percent to 74 percent of Navy health care executives who perceive a gap between current and required skills in a given management domain.

A comparison of response patterns shown in Tables 1 and 2 reveals a key factor for EME program design. Generally speaking, the data shown in Table 2 presents the opposite pattern shown in Table 1. The areas that are high on Table 1 (i.e., rated by many as important for effective and efficient functioning in an executive role at an MTF) tend to be low on Table 2 (i.e., fewer respondents report gaps in these areas as compared to others). The highest need areas shown in Table 2 tend to be in those "shared" areas for which an expert in that area typically resides within the command. Thus, it appears reasonable that executives see a gap in their skills in these areas, yet view them as relatively less important (but not unimportant) for the requirements of their position.

Needs for Management Education Perceived by Groups

As was done when considering requirements, it was also important to determine how the perceptions of skill gaps differed as a function of rank, corps, and position.

When considering skill gaps by rank, admirals stood apart from all others. Not surprisingly, admirals represented the lowest percentage of respondents for whom the data indicated a need for management education (50 percent). As previously stated, the admirals consistently assigned higher ratings to skill requirements when compared to members of other ranks, and also demonstrated that they were consistent in assigning the highest ratings to their current skill levels. The other ranks considered in this particular analysis tended to be clustered showing a slight increase in skill gaps as rank decreased. This relationship can be seen when considering the results for captains (58 percent), commanders (60 percent), and lieutenant commanders (62 per-

cent). In this context, it appears reasonable that larger gaps are expressed by those with less time and experience in the system.

Although we have reported findings on management skill gaps by rank, we determined that this particular analysis has less practical utility in designing and developing an executive education program when compared to one's position within a MTF. Since rank is not consistently related to position, and position is critical for determining *specific* management educational requirements for targeted groups; position thus becomes a more useful dimension for program design.

Additionally, the differences seen within position and corps may be particularly important. These differences were expected based on the field interviews and were, in fact, one of the primary reasons for doing the survey. Again, we believe that identifying these kinds of differences will support the development of an EME program tailored to executives in Navy medicine.

Figure 1 shows the percentage of respondents within each position that report management skill gaps. The figure shows COs and XOs who have been in the job more than 12 months report the lowest levels of management skill gaps followed by increasing skill gaps on the part of COs of less than 12 months, directors, department heads, and XOs of less than 12 months.

The clear outliers in Figure 1 are seasoned COs (those who have been in the job) and XOs new to the job. One would expect a higher "comfort level" from those who have been around the longest and much less comfort among those new to the highest levels of executive management. Often, new XOs who rise in the MTF hierarchy from a director's role may confront the organization for the first time from a less parochial and more systemic view. This finding is further highlighted by

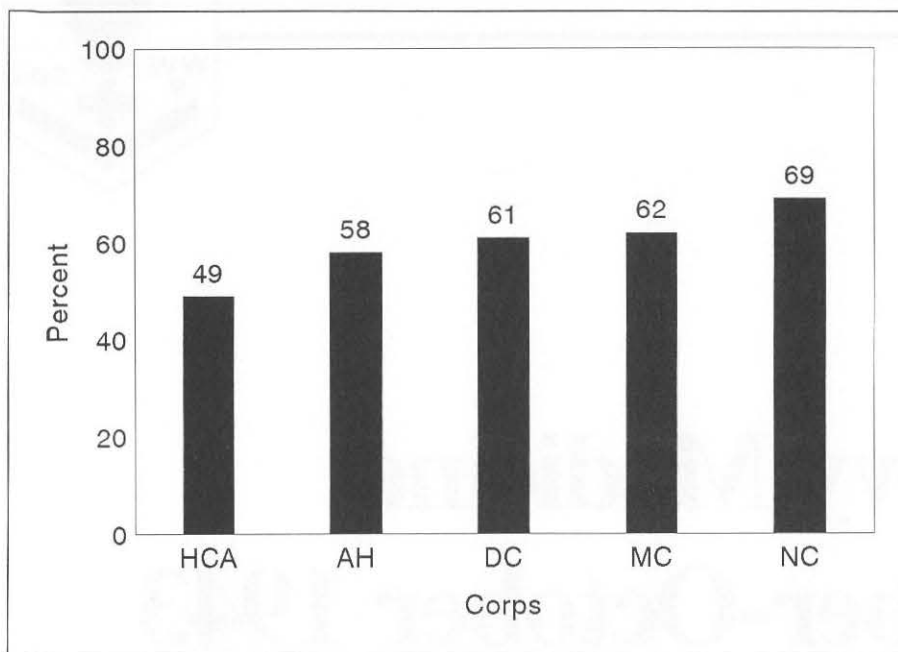


Figure 2. Percent Reporting Management Skill Gaps, By Corps

the jump in reported skill gaps from 59 percent for directors, a likely source of future XO's, to 72 percent for new XO's. Because the XO position is the critical and transitional entry level to senior executive management, the management education needs of new XO's are of particular interest here.

Figure 2 shows the percentage of respondents within each corps that perceive management skill gaps. More nurses than any other group report skill gaps. This finding is largely a function of the high skill requirements that nurses assign to each skill area since current skill levels are no lower among nurses than other groups.

Members of the Medical Corps, Dental Corps, and Medical Service Corps (allied health) report similar percentages of skill gaps, while Medical Service Corps (health care administrators) have the fewest number of people reporting skill gaps. Additional analyses (not shown here), reveal that the Medical Service Corps (health care administrators) respon-

dents rate their current skill levels higher than other corps groups in 13 categories. Further, in 8 of these 13 categories, the ratings range from 10 to 25 percentage points higher than the next closest group. Thus, it stands to reason that there are fewer members of the Medical Service Corps (health care administrators) who report skill gaps when compared to members of other groups. Given the management-oriented education and training necessary for this professional group, and a management career track commencing at entry level, it is understandable that this group probably perceives less of a need for education in management than the others.

The data presented in this section demonstrate the need for management education for executives of MTFs. These analyses suggest no need to delete any skill area identified in the survey. All 21 skill areas proved to be important to all Navy Department executives. Ratings of skill requirements identify the overall competen-

cies that must be met to function effectively in an executive capacity and as such define requirements once the EME program reaches a steady state. Gaps—the shortfall between skill requirements and skills reported as possessed—define the near-term requirements to address incumbents' perceived needs. In addition, these data will permit us to tailor program design to meet needs unique to executive position as well as corps. Finally, these data when coupled with an analysis of existing Medical Department education and training programs will allow us to tailor a program that avoids unnecessary redundancy in program availability and related costs.

Future Direction

The data presented here are currently being used to provide direction to the design of the EME program for Navy medicine. Other continuing activities include prototype testing of educational modules at MTFs (under way since January 1993), exploration of service short courses and other courses that can meet the educational requirements identified in this data, and analysis of the survey data with respect to educational background of the respondents. These efforts will be published in a future *Navy Medicine* article.

While this article has presented highlights of a more comprehensive needs assessment, a more detailed account can be obtained from NPS Technical Report, NPS-AS-93-016. □

Professors Roberts, Crawford, and Orloff are members of the Naval Postgraduate School faculty and the BUMED/NPS EME Program.



Navy Medicine

September-October 1943

Jennifer Mitchum

WITH THE SICILY CAMPAIGN officially ended and the Aeolian Islands under Allied control, the pathway to Hitler's Europe crossed the Strait of Messina and up the boot of Italy. The British were to land on the heel of Italy at Taranto and Foggia and then drive northward. The Americans planned to land one-third up the boot at Salerno, just south of the port of Naples. These two forces were to join and then move northward.

On 3 Sept, Italy surrendered to the Allies; however, German forces in Italy fought on. On the same day, British troops landed in southern Italy virtually unopposed. These forces began driving north to occupy the Italian boot south of Salerno.

Salerno Landings

On 9 Sept, an Anglo-American force landed on the beaches of Salerno. The Germans reacted swiftly and vigor-

ously with a series of strong counter-attacks. Within a week, German troops had penetrated as close as a mile to the Allied beach installations. By 15 Sept, the crisis had passed. Days earlier on 12 Sept, islands in the Bay of Naples had surrendered and a week later the French occupied Sardinia. But as the Allies proceeded north toward Naples, German resistance stiffened.

Navy Medicine in Italy

The Navy medical plan for Salerno resembled that of the Sicily campaign. Navy medics were to care for all service personnel while aboard Navy vessels and were to evacuate casualties from beaches during the operation's early phase. Army medics were to assist in treating Army troops aboard naval ships.

On the beaches, medical beach party members treated and evacuated casualties under adverse conditions. Set up

close to main roads and unloading areas, shore medical installations were susceptible to aerial attacks. In addition, their only marking, a red cross facing the sea, was not sufficiently discernable from the air, and provided little immunity from enemy aircraft. Moreover, medics could only care for about three patients at a time because sandbag splinter barriers were low and area shelters very small. Because of delays in securing the beaches, Navy beach medics also had to evacuate casualties under prolonged fire.

Evacuation

Transports, tank landing ships (LSTs), and hospital ships evacuated the wounded. Transports remained in the area until the D+2 after landings. Within the 2-day period, 513 casualties came aboard the transports (386 were Army, 106 were Navy, 21 were British Army and POW casualties); of

A marine gunnery sergeant receives basic dental care at a forward Pacific island location.

Photos from BUMED Archives

these 16 Army and 26 Navy patients died.(1)

Under heavy air bombardment, the transports sailed for Oran in French North Africa. There, transport personnel experienced difficulty evacuating patients to Army ambulances partly because enforced radio silence prohibited transports from making prearrangements for ambulances. In addition, evacuation had to be swift, for ships were on standby and had only 2 hours for evacuation. USN Base Hospital No. 9 had arrived at Oran on 3 Sept and began setting up shop. Many wounded, however, were initially treated in Army medical facilities.

Back in Italy, hospital ships and LSTs provided evacuation. Lessons learned from the Sicilian campaign had led to changes in the administration and operation of hospital ships. Unlike Sicily, all hospital ships came under one central command—the Allied Force Headquarters. In the first 5 days after the invasion, hospital ships operated on a prearranged schedule, arriving in battle zone areas at sunrise and departing at sunset. They evacuated patients to several ports including Oran, Algiers, Bone, Bizerte, Tunis, Tripoli, Augusta, and Catania. These plainly marked vessels, however, were not immune from the Luftwaffe. HMS *Newfoundland* was lost as a result of enemy action.

LSTs

As in the Sicily campaign, LSTs proved their worth in evacuation of sick and those with minor injuries over short hauls. About 430 such casualties were evacuated via LSTs from the northern area.(2)



LSTs carried a medical complement of one medical officer and three pharmacist's mates. Each ship had 75 litters, 60 cots, 150 blankets, and 36 units of plasma, 8 units of saline-glucose, and 8 units of saline.(3) There were also sulfonamide drugs and tetanus toxoid in liberal supply.

As in Sicily, the LSTs were underutilized. The unloading of ammunition stores resulted in delays in bringing casualties aboard. In future

operations planners suggested that short-haul-hospital-designated LSTs be clearly identified. Moreover, at least one surgeon or surgically trained physician should be assigned to these LST hospital units.

New Georgia Concluded

As the Mediterranean campaign intensified, the New Georgia campaign in the Pacific entered its final stage. Within the Navy ranks, malaria

ran rampant with cases rising from 26 in August to 273 in September.(4) Marines showed a slight increase going from 89 cases in August to 107 in September.(5) The Army, with 1,054 of the 1,434 malaria cases reported in September, had about 240 more cases than it had in August.(6) Despite increases, combat phase malarial numbers for the New Georgia campaign were favorable when compared to even the noncombat phase malarial numbers for the Guadalcanal campaign. CDR James J. Saper, MC, malaria control officer South Pacific, credited well-trained malaria control units and cooperative line officers and troops for improved malaria numbers.

"...Malaria never became a major military threat. The low rates achieved, in contrast to the earlier experience, will go down in history as a classic of what may be accomplished in disease prevention."(7) Saper also added that the low prevalence of malaria was not because New Georgia was naturally

less malarial than other islands in its vicinity.

Evacuations

SCAT (South Pacific Combat Air Transport) planes continued air evacuations from the New Georgia area. In September, 488 casualties were evacuated by SCATs, bringing the total number of wounded leaving the New Georgia area by these aircraft to 620 by the campaign's end.(8) The majority of the wounded, however, were evacuated by sea. All together, 1,533 patients were evacuated from the New Georgia area, raising the total number of evacuees from 6,693 (30 June-31 Aug) to 8,226.(9)

Area Hospitals Kept Busy

Many New Georgia casualties were evacuated for treatment at either Mob-8, on Guadalcanal, or at one of the smaller medical facilities scattered throughout the American-held Solomon Islands. Mob-8, however, be-

Right: In many instances, LSTs were used to evacuate patients over short hauls.

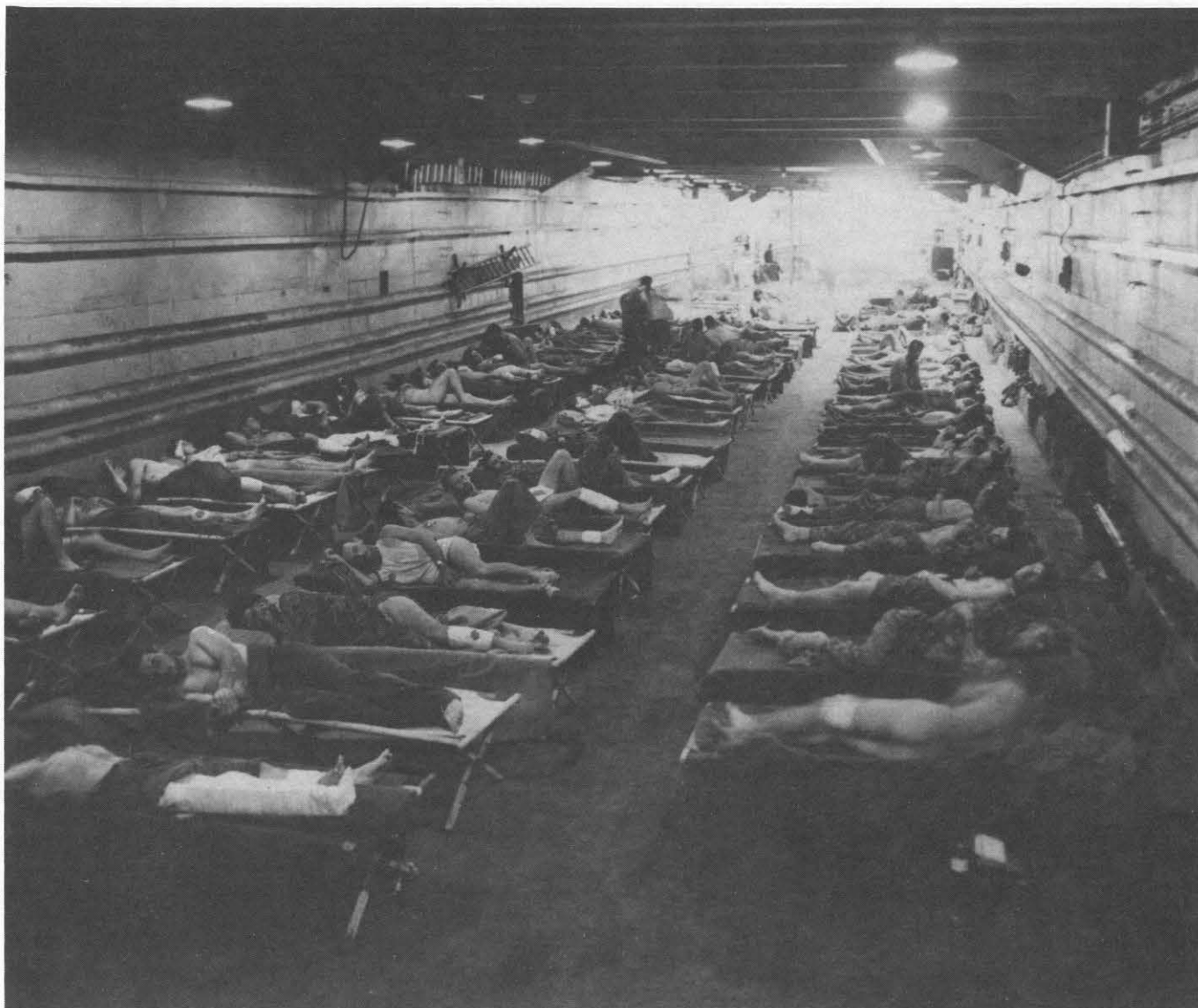
came the focal point of Navy medicine in the war zone. In addition to being a large facility with specialized staff and equipment, Mob-8 was accessible both by air and sea.

In part because of its location, Mob-8 was subjected to several air raids. One such raid occurred on 17 Sept while Mrs. Eleanor Roosevelt was visiting the hospital. During the attack, the First Lady shared a bomb shelter with several ambulatory patients. On 21 Sept, an engine from an enemy plane shot down about 500 yards from the hospital's west boundary, severed the hospital's main water supply line. For nearly 20 hours, Mob-8 had to rely on one 126,000 gallon tank and two 15,000 gallon tanks.

At Henderson Field, Guadalcanal, personnel also transferred battle casualties to planes destined for the more secured southern islands of New Hebrides, New Caledonia, and New Zealand for treatment. On New Hebrides, Base Hospital No. 2 continued to provide medical care for battle casualties coming via air ambulance until the end of September. After September, forward area casualties bypassed the hospital and were taken to hospitals further south. On New Caledonia, Mob-5 continued to operate with an increased bed capacity of about 2,100, approximately 1,100 additional beds. On New Zealand, Base Hospital No. 4 admitted 1,531 patients in September and 827 in October,(10) and Mob-6 maintained an average patient load of about 700. Navy medical personnel at Mob-10



German prisoners, captured in the Salerno operation, await removal from the beach-head area. Prior to evacuating them, Navy medics treated injured POWs.



on the Russell Islands, which had been commissioned in late August 1943, also assisted in handling New Georgia casualties.

New Guinea

In the early phases of World War II, Allied forces effectively halted the Japanese southward thrust in the Pacific toward Australia. This was only temporary, however; by the end of 1942 the Japanese controlled much of New Guinea. For the Allies, New Guinea offered, among other things, additional inland airfields. For the Japanese, the island provided a more

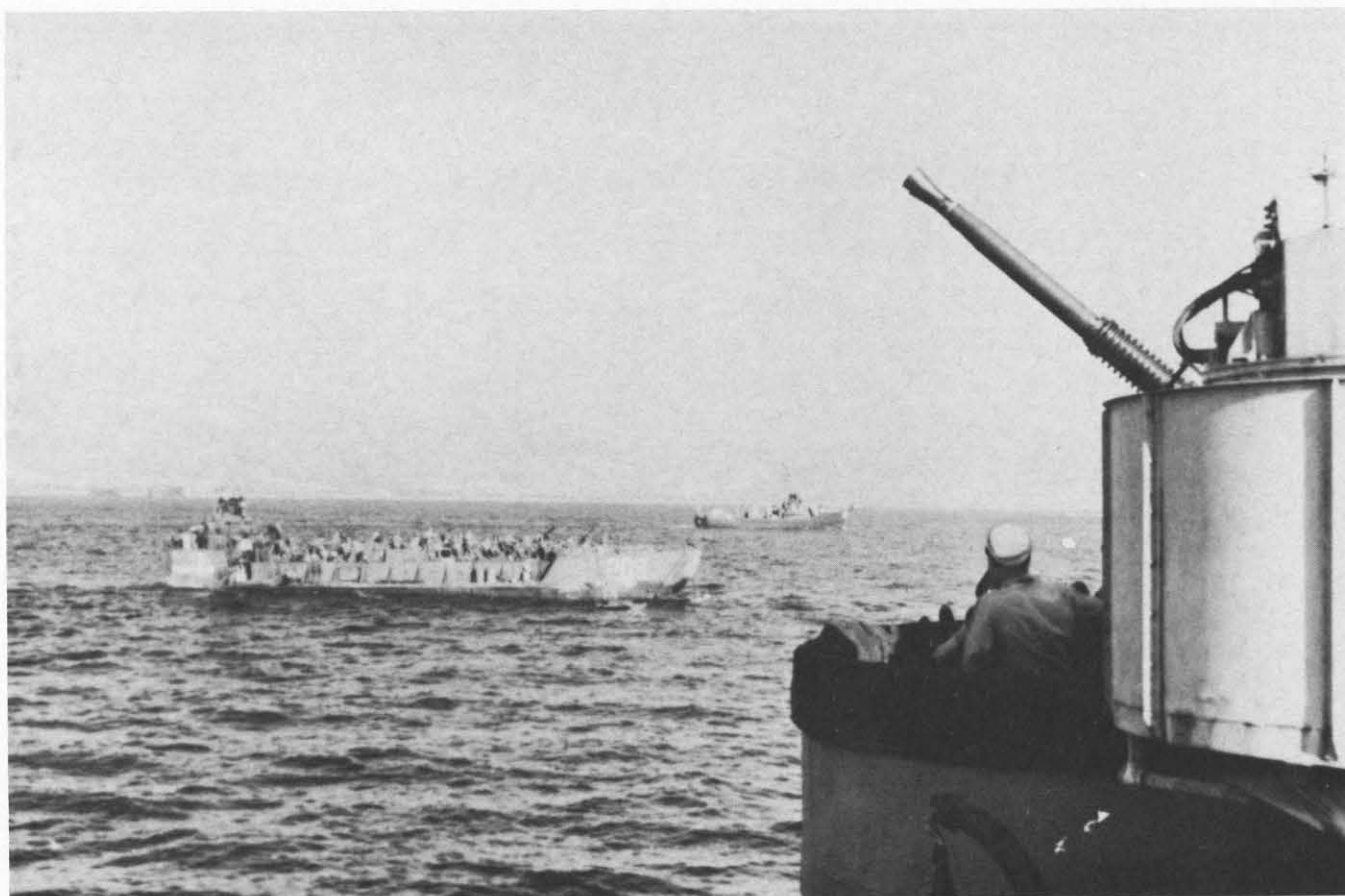
direct Madang-Lae supply line.

On 4 Sept 1943, a U.S. naval force landed Australian troops east of Lae while airborne troops landed to the west. Other Allied troops launched a diversionary move against Salamaua. Initially, on one New Guinea beach "nary a Jap was seen"(11) and on the other the enemy had abandoned defenses and fled. However, the Japanese quickly regrouped and counterattacked.

Lae

More than 16,000 Australian troops were put ashore by 13 LSTs, 20 land-

ing craft, infantry (LCIs), 14 landing craft, tank (LCTs), and 4 high speed transports (APDs).(12) Medical personnel rendered treatment aboard sea vessels until medical facilities were established ashore. Each LST carried one medical officer and equipment for emergency surgery. A medical officer was also aboard one of the LCIs and corpsmen served on the others. USS *Rigel* (AD-13) was also in Milne Bay and received Navy casualties. There were also two Army general hospitals at Buna and Army clearing stations at Milne Bay and Morobe, which together provided about 3,000



beds. The engineer special brigade and a regimental medical detachment were responsible for evacuating casualties from the beach.

On 16 Sept, airborne troops from the west rendezvoused with troops coming from the east and trapped the enemy in a giant vise. Within 2 days, Lae fell to the Allies.

Finschhafen

Finschhafen was to be taken at leisure once Lae had fallen. With Lae collapsing sooner than expected, General MacArthur planned to push his advantage and capture Finschhafen promptly. The enemy expected the Allies to come overland, but they came by sea. Thus, the Japanese placed the majority of their troops south and west of Finschhafen and left few at landing beaches. Several days

passed before the enemy could mount a counteroffensive. By 2 Oct, Finschhafen was in Allied hands.

Sanitation on the island was poor. The tropical climate and rugged terrain made it difficult to render care and handle casualties. Although malaria, dengue fever, filariasis, and other tropical diseases were common, overall, casualties, were surprisingly few.

Rabaul

On 12 Oct, approximately 350 Allied planes bombed enemy forces at Rabaul, damaging one transport and two destroyers, and sinking two small craft. As of Columbus Day 1943, the Japanese had three offensive campaigns to counter—one each in New Guinea, in the northern Solomons, and over Rabaul. The Japanese seemed to have viewed the northern Solomons

campaign and Rabaul as greater threats, and therefore neglected New Guinea.

The New Guinea Training Center

The amphibious training center which had been established at Milne Bay, New Guinea, in January 1943 continued training troops in amphibious assault methods. Medical officers received instruction in care of and evacuation of casualties. They were also briefed on how to complete reports as well as how to improve ship sanitation and to prevent diseases prevalent in the area.

Elsewhere

In Washington, DC, BUMED was being restructured. Following an organizational study, many divisions and subdivisions were reorganized, includ-

Landing craft, packed with men and guns, head for the coast of Salerno, Italy, under the protection of U.S. warships.

ing the Physical Qualifications and Medical Records Division (PQ & MRD) and the Aviation Division. As an adjunct to the PQ & MRD, a neuropsychiatry section was set up temporarily. Increased work in aviation medicine dictated that the Aviation Division be expanded from two sections to five. Among the sections added were training and research subdivisions. BUMED also strengthened communication with the Office of the Chief of Naval Operations (CNO), BUPERS, and Congress. Three officers from BUMED's war plans section had been assigned to the CNO's Office in the summer.

The Navy Medical Department continued its hospital expansion program. In August 1943, the medical organization of Lion One on Espiritu Santo had been redesignated as USN Advanced Base Hospital No. 6 and became a separate command. Throughout September-October improvements were made at the hospital. On 3 Sept and 1 Oct, USNH Oceanside, CA, and USNH Shoemaker, CA, were commissioned respectively.

Also at Shoemaker, CA, Navy medical personnel who were to staff Mob-12, destined for the Russell Islands, were going through final screening and training. On 17 Sept, the 12th Naval District Medical officer commissioned Mob-12. Incidentally, Mob-12 did not sail for the Russells until December.

In the United Kingdom, a 34-bed dispensary was commissioned at the U.S. Advanced Amphibious Training Base (USNAATB) St. Mawes,

Cornwall, on 7 Sept. Then on 11 Oct, a 220-bed dispensary was commissioned as part of USNAATB Falmouth, Cornwall. Similarly, following the establishment of an amphibious training base at Fowey, Cornwall, on 15 Oct, a 93-bed dispensary was commissioned there on 25 Oct. Prior to September-October, the Navy had commissioned two dispensaries in the United Kingdom—one a 61-bed dispensary commissioned in July at USNAATB Appledore, Devon, and the other a 325-bed facility at USN Base Roseneath, Scotland, in August 1942.

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Self-Regulation Techniques for the Treatment of Chronic Emesis During Military Flight Operations:

A Case Report

MAJ Larry C. James, MS, USA
LTC Myron Harasym, MC, USA

P.J. WAS A 25-YEAR-OLD NAVAL officer with limited flight experience assigned to a Fixed Wing Squadron as a navigator. There were reports of neither chronic vomiting during preflight/landing training, nor emotional trauma associated with flight. The officer had no prior experience of medical problems. Routine laboratory and ENT (ear, nose, throat) tests were within the normal limits. P.J. reported a high motivation to fly without apparent secondary gain. Reports from P.J. and the flight medical officer indicated that emesis occurred neither during takeoff nor landing. Rather, the vomiting occurred one or two times during each flight upon a banking maneuver.

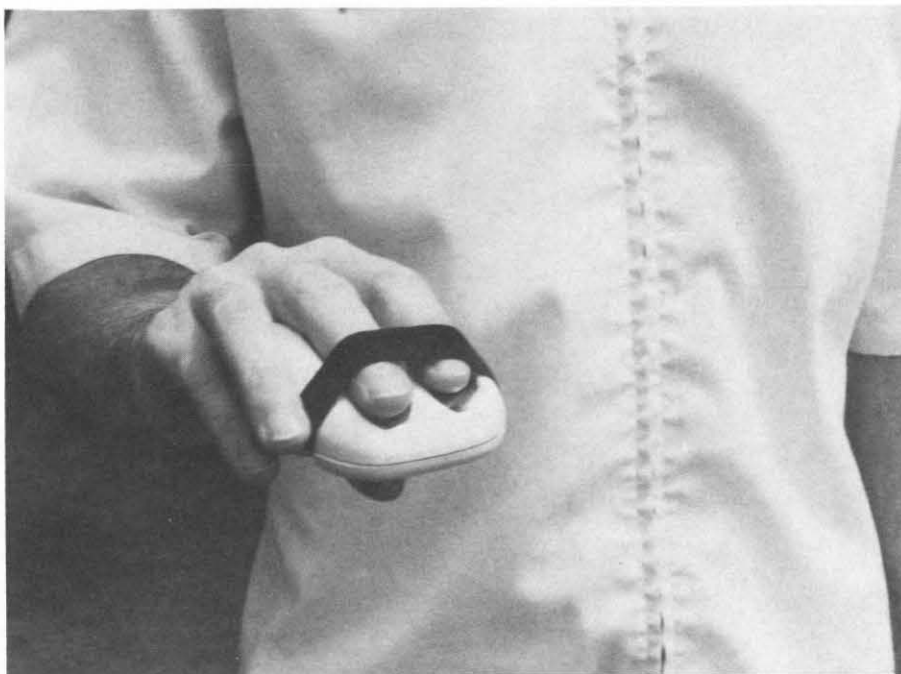
Method

An anxiety hierarchy was developed. Through this procedure, P.J. was able to develop an anxiety hierarchy and locate at what point emesis began. Eventually, an association between increased anxiety and emesis was drawn. Treatment was designed for a total of 10 sessions of self-regulation techniques, coupled with home practice each day. As part of the treatment, P.J. wrote out a vivid description of a comfortable and relaxed scene. This material was incorporated into a guided imagery tape which was used daily. Upon the completion of treatment, P.J.'s squadron deployed overseas. One-year and 6-month

followups with the squadron medical officer were provided. Applications of each self-regulation technique are discussed below.

Guided Imagery

Several authors (Hadley and Staudacher,⁽¹⁾ Norris and Porter,⁽²⁾ and Soskis),⁽³⁾ have posited ideas for guided imagery and/or visualization techniques. These ideas served as a guide to transform P.J.'s comfortable scene into a guided imagery tape. His home practice involved listening to the tape while practicing with a Galvanic Skin Response (GSR) monitor. Through continued daily practice, P.J. was able to decrease the tone of the



GSR biofeedback monitor for stress reduction.

GSR monitor. Moreover, P.J. reported the tape was also utilized during breaks in the daily training schedule. This perhaps served as a preventive measure. In other words, this may have served to control physiological symptoms while anxiety was low. In effect, this prevented his nausea symptoms from occurring. Prior reports stated that interventions were only attempted after P.J. became nauseous. Therefore, biofeedback was practiced each morning before flight training. The belief was that this served to keep anxiety at a manageable level.

The autogenic phrases incorporated into the relaxation tapes held a particular importance. For example, Schultz and Luthe provided a list of phrases such as "my abdomen is warm and my arms and legs are heavy and warm."⁽⁴⁾ P.J. reported that during flight these autogenic phrases kept the symptoms at a comfortable level.

Diaphragmatic Breathing

Loehr and Migdow⁽⁵⁾ outlined the principles of proper breathing and

postulated that diaphragmatic breathing actually served to decrease the heart rate. The authors argued that this technique stimulated the parasympathetic nervous system rather than the sympathetic system. In other words, this breathing decreased the patient's heart rate and provided greater breathing efficiency. Therefore, P.J. was asked to practice diaphragmatic breathing three times daily for 10 weeks.

Cognitive Restructuring

Ellis suggested that many of our problems were not the event itself;⁽⁶⁾ rather, the perception of the event. Burns taught patients to reduce stress and control anxiety by altering their irrational beliefs and cognitive distortions.⁽⁷⁾ In the current study, cognitive distortions such as: "the plane was going to crash" or "I'm going to die" were a part of the patients normal preparation for flight.

These beliefs were modified through brief cognitive behavioral intervention. Hence, P.J. was also taught to control his cognitive distortions by

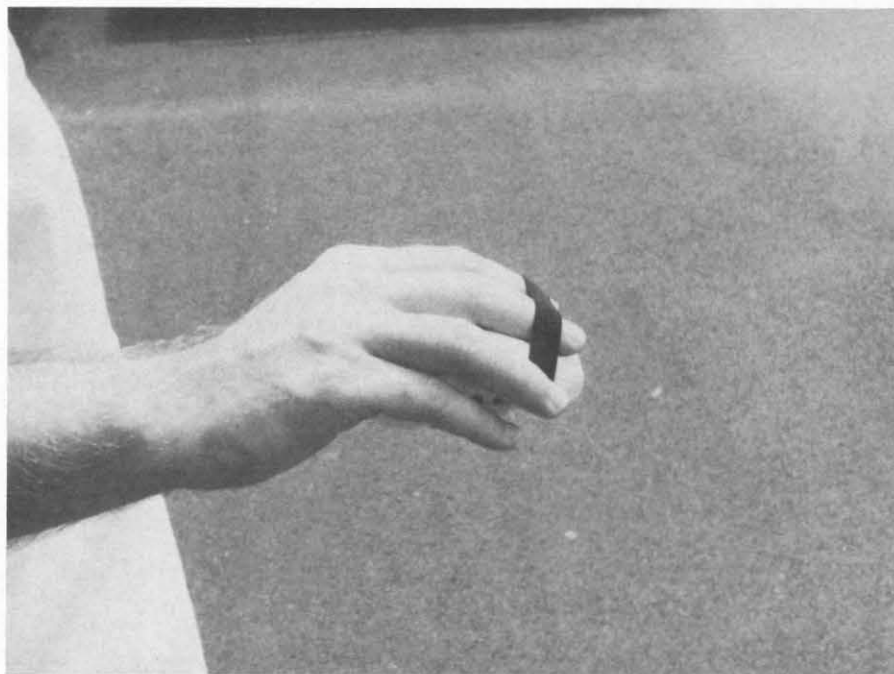
challenging the irrational beliefs.

Biofeedback

A handheld thought technologies GSR was given to the patient for daily practice. A tape recording of a comfortable scene was employed as a vehicle for guided imagery/progressive relaxation. Physiological symptoms were monitored with the GSR monitor. The home practice was augmented with outpatient followup. This consisted of weekly appointments for 10 sessions. By the seventh outpatient session, the patient was able to completely decrease the GSR tone. In addition, the GSR handheld monitor enabled P.J. to monitor his physiological symptoms during flight.

Motion Sickness Simulation

The patient was asked to stand and rotate around and around until dizziness occurred. This technique was modeled after NASA training programs.⁽⁸⁾ Again, with home practice, symptom reduction began. At the same time, heart rate was monitored by a



GSR biofeedback monitor for stress reduction.

thought technology heart rate monitor. Resting heart rate was 65 beats per minute. During the simulation, heart rate fluctuated between 70 and 73 beats per minute. Through practice, heart rate decreased to 60 beats per minute. At the same time, the handheld GSR monitor was used.

Human Factors Conditions

A simple change in the seating arrangement was suggested. Anecdotal reports of disorientation were common due to seating assignment of the navigator. The navigator frequently sat in a position which did not allow a plain view of the horizon. Hence, the sense of reference was lost in flight during maneuvers. A simple change in seating arrangements was made and disorientation decreased.

Results

After approximately nine sessions and daily home practice the emesis symptoms decreased. After the 10th session, the patient left for a 6-month

flight operation. A 6-month followup revealed complete symptom reduction. Further, a followup with the referring medical officer 1 year later suggested remission of the emesis symptoms. P.J. reported in a 6-month followup by phone, that daily practice of guided imagery and GSR training continued to control the emesis.

Discussion

The results suggested the generalization of self-regulation techniques to many settings. Often, biofeedback has not been applied to this setting due to many practical reasons. Small GSR units coupled with self-regulation techniques noted above, were modified for use in the aviation community. These findings may suggest the use of the self-regulation techniques in many environments. It would be prudent for one to be cautious in the over interpretation of the results. Many practical problems, temperature artifacts of the airplane, etc., were difficult to control. Nevertheless, these findings sup-

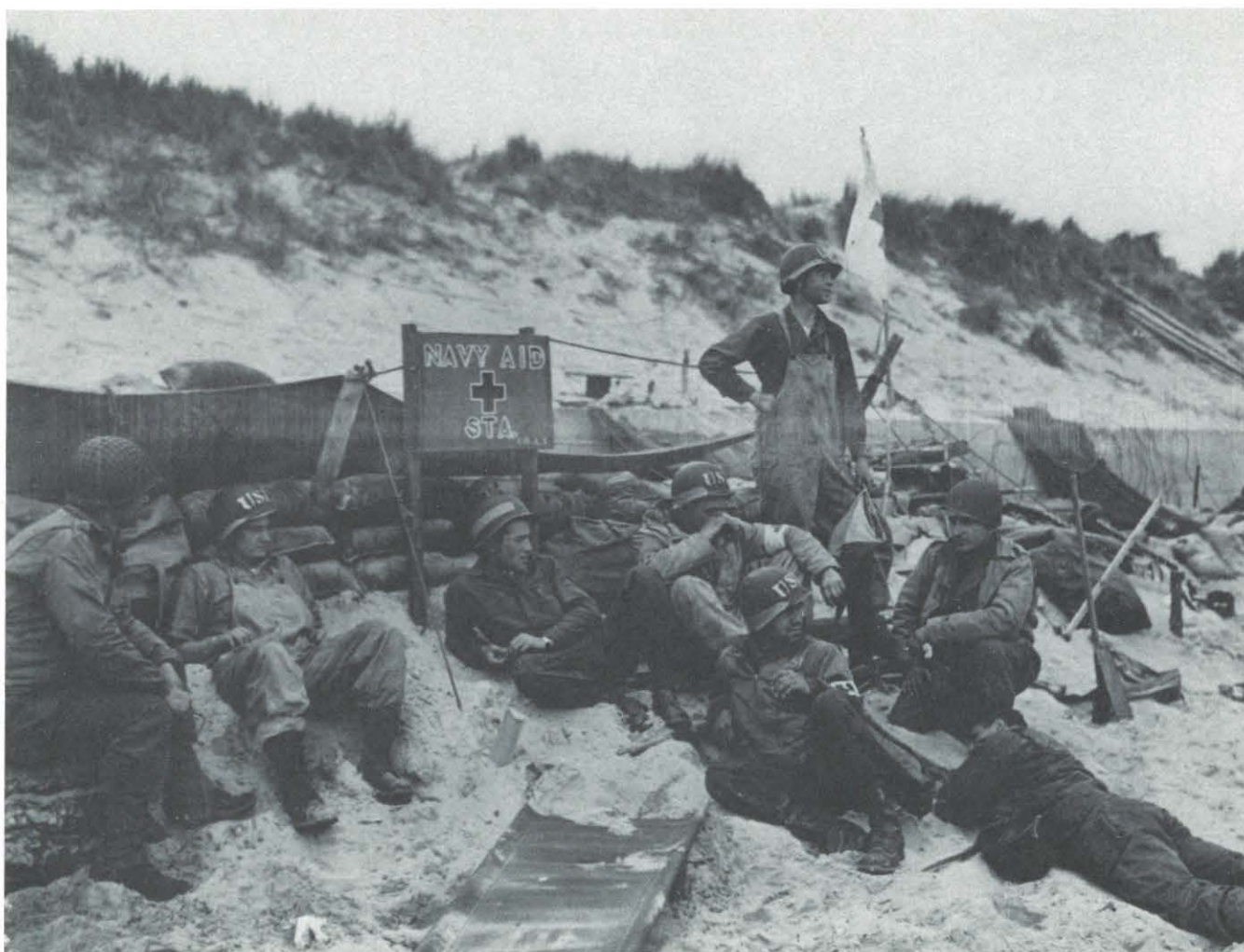
port the utility of these techniques with disorders and environments as such. Many more scientific studies offering greater control and larger samples are needed to further generalize these findings.

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Navy corpsmen and members of the 2nd Beach Battalion take a breather on a French invasion beach following heavy action.

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